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EDITORIALS

The Value of Rubber in Oil Production

OBSERVING the enormous development of the oil industry, it seems incredible that at one time the high cost of rubber deterred many from even boring wells in favorable fields. The most effective instruments for cleaning out well casing pipe before inserting pump tubing were rubber swabs; but usually they cost so much, were so soft and easily torn, and had to be replaced so often with much loss of time that wells yielding only low grade oil were frequently abandoned. The swab expense was sometimes one-tenth of the price of a barrel of oil. Rubber is still preferred for swabs, but the design, composition, and efficiency have been so greatly improved that such swabs have become invaluable instead of being regarded as a necessary evil. This is but one of many proofs that the art of rubber manufacturing has kept as much pace with progress in the oil industry as it has with the expansion of all other great industrial enterprises.

Decentralization of Rubber Manufacturing

WHILE the immediate cause for the announcement that Goodyear, Goodrich, Michelin, and Pirelli companies will open tire factories in England, is the imposition of an import duty on tires in that country, the movement can be viewed from the larger angle as a part of the general trend of all industry, the rubber trade in particular, to decentralize its large manufacturing units.

Experience has shown that in concentrating manufacturing under one roof, eventually the point is reached where the freight on raw materials, and the back-haul for finished goods, with branch warehouse expense, imposes a greater burden than the savings of mass production. Goodyear is gradually encircling the globe with rubber plants: California, Canada, Australia, now England. Similarly the motor industry has extended projects of assembly units. In this connection Hudson has just announced that a large assembly plant will be built in Germany.

As the European and other foreign countries gradually become reestablished economically, competition for their markets will increase, and the establishment of units in these countries can be viewed as a far-seeing move to meet that condition. True, it will not give employment to American labor, but American capital, American engineering, and American investors will continue to share in the rewards. Our universities are turning out more technical graduates every year, and in certain sections the problem of absorption by industries is becoming increasingly difficult. These foreign ventures offer new outlets for these men.

Recent improvements and developments in machinery and processes, especially in the tire industry, favor the smaller unit. Watchcase vulcanizers, accelerators, continuous processes, all tend to lower the equipment costs for the tire manufacturer. For example, a small established rubber manufacturer can spend a few thousand dollars today and be equipped to turn out several hundred 30 by 3½ tires daily. The technical staffs of chemical manufacturers now cooperate to such an extent that the maintenance of a huge laboratory by the small manufacturer is now unnecessary.

Thus we have a trend toward decentralization at home and abroad. It will help both the large and small manufacturer and build up local industry as well as disperse prosperity over a wider area.

Promotion the Reward to Loyalty

OF all the advancement made within the rubber industry perhaps none exceeds in importance that made in waste reduction, both in materials and time, the improvement being particularly marked by the elimination of stages of manufacture. At one time half a dozen processes were required to produce articles which now require but four, three, and even but two. The goal sought, and closely approximated in some cases, is the consolidation of all into one continuous process in which maximum economy may be effected.

However, while such headway is being made in manufacturing methods, progress in "continuous process" is not so noticeable in executive office work nor among operatives, although the continuous idea should be as applicable in one case as in the other. Linking workers to operate like an endless belt may help in saving lost motion, but it is better to look beyond such a mechanical principle. Every worthy worker should be made to feel that he is eligible for promotion, and be so trained as to at once fill a job higher up, and in preference to an outsider. With such a system gaps could be quickly closed, time would be saved, and organization efficiency enhanced.

* * *

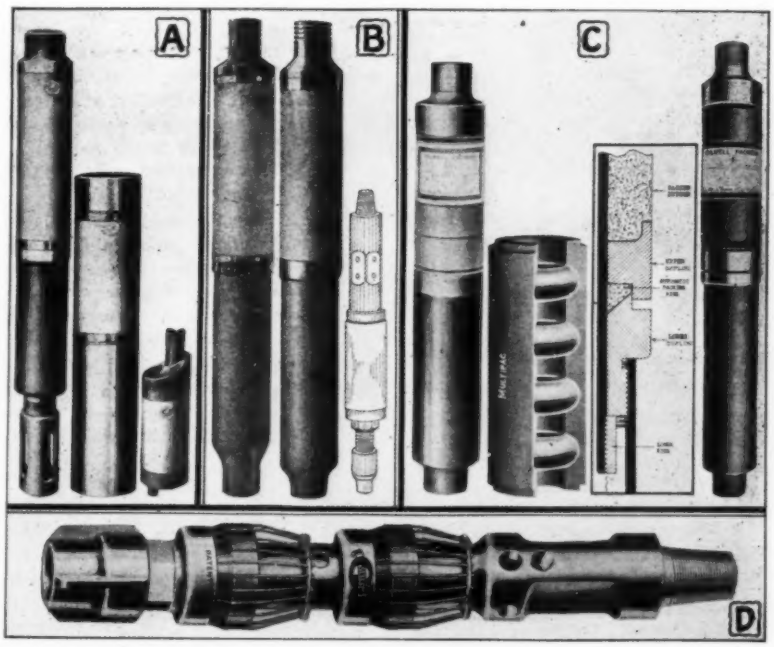
MANY-STORIED MILLS MAY HAVE MANY ADVANTAGES, yet they may ill compare sometimes with single-story factories. It costs one large Akron concern $300,000 a year just to lift and lower materials; but in its projected one-story Southwestern branch factory it is said that such cost will be quite eliminated. Truly a saving enough to pay 5 per cent interest on $6,000,000 bonds or shares is no mean achievement, even if it be as yet but prospective.

Rubber in Oil Production

An Indispensable Material Used in Many Interesting Forms in the World's Petroleum Fields

RUBBER may be usually better off without oil, but oil cannot do without rubber. At least that is the practical experience of two generations of workers in the great petroleum fields of the world. Oddly enough, there is much in common between the oil and rubber industries. The amazing prosperity of both has been intimately associated with the remarkable development of another great industry, automobile manufacturing; and on other three, perhaps, have shown a closer interdependence in achieving such striking success.

How rubber makes possible the production of some two and a half million barrels of petroleum weekly in America alone is a curious story. It plays such inconspicuous roles in comparison with the impressive derricks, storage tanks, and walking-beam pumps that its value is almost unknown to the average visitor to the oil fields. But the husky hunters for "black gold" know well that next to their drills and pumps of steel no element is so essential in their work as rubber. Whether a well be scarcely 100 feet deep or be driven 8,200 feet, like one in the Olinda district of California (the deepest oil bore in the world), the narrow hole cannot be made satisfactorily or the oil efficiently drawn from the bowels of the earth and conducted with minimum loss to often distant points without various fittings of rubber.



Packers are Steel Cylinders which Expand a Tubular Section of Rubber Sealing the Space Between Inner Pipe and Casing.

A—Dresser Packers. B—Spang Packers and Swab. C—Oil Well Supply Co.'s Packers. D—Guiberson Oil Well Swab.

Swabs Are Sections of Pipe Carrying Rubber Cylinders or Cups that Expand or Contract in Casings of Different Diameters.

One of the earliest uses of rubber in the oil industry was in the form of simple swabs for cleaning bored wells and as piston rings for pumps. Rubber packers for automatically expanding sleeves soon appeared, and rubber belting, hose, valves, gaskets, oil-savers, bushings, blowout preventers, etc., followed in seemingly endless variety.

Oil Well Swabs

After a derrick has been set up and a hole made in the earth either by continually lifting and dropping a chiseling tool at the end of a steel cable hanging from a pulley at the top of the derrick, or by the rotary process, using a drill attached to small-bore steel pipe which is steadily lowered, and prior to mudding outside or cementing the casing tubing, the well must be cleaned of oil or water. This is usually effected with a rubber swab, which is primarily a short section of piping carrying one or more usually plane-surfaced rubber cylinders or sleeves, 6 to 12 inches long, or cup-like rubber sections, and attached to the drilling tool string. Swabs may range in weight from 60 to 350 pounds. A more bulbous type is often used as a temporary packing in a well.

In most fields swabs are permissible for cleaning out a well after being "brought in" or when being overhauled, but many operators also use them to get quick results in pumping. This practice has recently been forbidden by law in Texas, the reason given being that swabbing often causes such great suction in the oil sands as to even seriously impair the flow of oil to wells using standard pumps.

An improved type of swab employs two rubber cups having upturned flanges on their lower side and inclosed in cages of light, flexible spring wire that prevents pipe joints or projections within the pumping tube from tearing the edges of the cups, and which also allows the cups to expand and contract sufficiently in casing pipe of different diameters. In a great many wells the casing diminishes in size with the depth of the well.

Rubber Packers for Wells

Often the pressure of a column of water in a well is so great as to counteract either the naturally compressed gas or the hydrostatic pressure which would normally force oil into the well; and where it does not actually stop oil from entering, it may compel the pumping of considerable water mixed with oil and may cause

much expense for separating the two or getting rid of them as an emulsion. Hence water must be excluded. To keep surface water out of a well various materials have been used to pack cavities, including dried seeds and cereals in bags, canvas strips, or hemp rope coiled about the inner or pumping pipe; but these have been almost wholly discarded in favor of mechanical packers. The latter are, in general, connected steel cylinders so designed as to expand a tubular section of rubber and thus seal the space between the inner pipe and casing.

Packers range in length from 3 to 8 feet, the rubber sleeve varying from 3½ inches to 3 feet and from 1 to 2 inches in thickness. In one form of bottom-hole packer used on the lower end of a string of pipe, conical metal sleeves telescope and expand a rubber cylinder under the weight of the pipe when the latter touches the well bottom. Such a rubber cylinder fits snugly over the top or inside metal sleeve and is about ⅛ inch smaller in diameter than the hole it must fill.

In a lead and rubber bottom-hole packer, about 9 inches long, the steel upper part is united by means of a 3½-inch rubber sleeve to a flat 1-inch ring of lead on the under side. In another and longer type of bottom-hole packer a 10 to 16-inch rubber sleeve unites two steel cylinders. The rubber sleeve either grips the cylinders itself or is secured with wire or a special band fastener.

Gripping Wall Packers

Wall packers used for closing the space between two strings of pipe or between the pipe and the walls of the well at a point above the bottom are often fitted with a series of slips operating on a tapered cone, while friction springs support the weight of the casing or tubing on which the packer is placed. When a wall packer of the disk type is lowered into position and a weight of pipe is dropped upon it the disk is broken, a spring is released on the lower end of a rubber sleeve, the latter is compressed between the slips and the bottom collar, and the spring forces the slips upward on the tapered cone; while a further lowering of the column of pipe causes the slips to move farther up the now conical rubber sleeve until they press the latter to the utmost against the casing at the side.

Packers of the hook-wall type differ from the disk in having the slips held on the lower part of the rubber sleeve by a hook latch released by giving the tubing to which it is attached a half turn. This disengages the hook, releases the slips, and as the pipe is lowered its pressure causes the slips to slide upward, the rasp-faced hooks to engage the walls, and the rubber sleeve to expand to its maximum. One form of such packer also provides a tube outlet for drawing off gas.

While disk and wall packers may be used only on casing which does not rest on the bottom of a well, an anchor packer may be used at any point in a column of piping. This type, with its rubber sleeve, resembles a bottom hole packer, but differs in having a pipe connection on the end, and is often used to close the space between two strings of pipe or between the casing and the well wall. In one type two rubber sleeves are used, the upper telescoping over the lower one, spreading by giving it a part turn and then allowing the casing to weigh upon it.

Another type with a rubber sleeve and which somewhat resembles a bottom hole packer is called a casing anchor. It is used to pack a well quite above the bottom and to hold either water or gas down at a desired level outside a casing.

Packing Without Weight

A different form of well packer is the screw-down liner which does not depend upon the weight of the casing to expand the rubber sleeve, such distension being effected by screwing an upper conical metal sleeve into a lower one. With it water or caving material can be excluded even in shallow wells where casing weight cannot be obtained. Two rubber sleeves are used in one type of double liner packer designed to shut out gas or water at any desired level.

A wash-down packer for clearing out sand that has settled around tools in a well has a short rubber sleeve set above a steel sleeve long enough to fit over the drilling bit or other tools which may have become imbedded. A short rubber sleeve is also used on an overflow wall packer which can be set at any point on a well wall and which allows of oil being pumped from strata above or below the packer; and a similar rubber sleeve is also part of a pumping packer used for shutting off water above oil-bearing sands, and which is set by the weight of a gas-escape pipe. In a hook-wall pumping packer use is also made of a rubber sleeve and provision made for a gas outlet where pressure is excessive.

What is said to be a very effective safeguard against a gas blowout is a packer having not only the usual rubber sleeve above, but also a self-adjusting rubber packing ring between the upper and lower couplings of the packer barrel.

Armor and Bootleg Packers

When wells have been drilled too deep they are usually sealed off with a plug packer, made in either bottom-hole or wall-plug type, and equipped with a 10-inch rubber sleeve.

One of the oldest of rubber packers is the armor or Macksburg. It works on the simple principle of superimposed piping driving a metal cone into a plain rubber sleeve. While it serves its purpose well it is, however, hard to remove from a hole if the piping above it breaks.

A conical rubber sleeve packer resembling the armor type is often used in wells where the hole is overgage or enlarged. Another type, the bootleg rubber packer, assumes a funnel shape on its upper side under pressure and serves to keep shale and gumbo cavings from descending.

Under much weight or torsion, rubber sleeves on packers may become detached from their holders. To guard against this a newer type of packer has the rubber fastened to the packer frame with a slotted iron band through which duck and wire gauze strips are passed and molded into the rubber in such a way that the latter cannot roll over the packer even under high pressure or be in any wise displaced.

A unique type of packer uses four rubber packing rings with a convex outer surface. Steel rings having a flat outer surface support the inner body of the packer, help in compressing the rubber rings, and cause the latter to afford extra strong packing surface especially for wells having high gas pressure.

Still another use for a rubber sleeve or bushing in an oil well is for protecting a drilling bit. When it is desired to draw up the latter for resharpening or replacement, a rubber cylinder is lowered over the drilling string to the bottom and by encasing the bit safeguards it from damage at the points while being drawn up the casing.

Rubber Checks Poison Gas

Two harmful and malodorous gases that sometime issue in large quantity with natural gas from oil wells are hydrogen sulphide and sulphur dioxide, both familiar to rubber technicians especially because of their use in the two-gas Peachey cold vulcanization process. Another gas which is more dreaded because of its less pungent odor, and which has been quite troublesome in some mid-continent oil districts, is carbon monoxide, the lethal vapor found in the exhaust from gasoline motors.

Still another gas which bothers well-drillers, particularly in the Panhandle section of Texas, is described as akin to phosgene, a poison gas early used in the World War, which is always tear-producing and which has been fatal to several workers. All these gases are, however, now kept well in check with suitable packing or other rubber contrivances, especially with oil-saving tubing heads of rubber, which by automatically collapsing under up-pressure force gas out into side vents at the top of the well tubing and safely away from the workers.

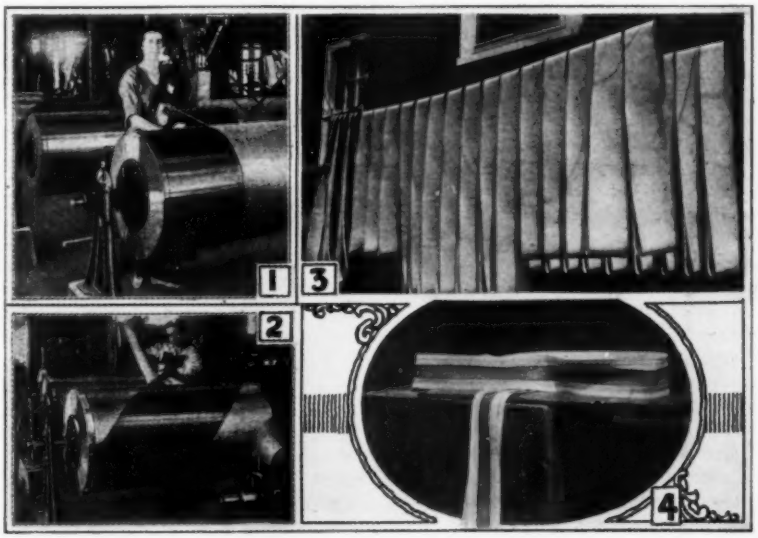
(To be continued)

Manufacture of Bicycle Racing Tires

One of the important divisions of the tire manufacturing industry in the United States about which very little is generally known is that section devoted to manufacturing tires for racing bicycles

ONLY a few years ago, comparatively speaking, bicycle racing tires were prepared by simply buffing the sidewall and a greater portion of the tread from the better of the regular service tires. The insistent demand, however, of race riders was for lighter, more resilient and faster tires, and prior to 1914 several attempts were made toward this end which were more or less successful. In 1914, however, E. A. Pye, who for many years was a sprint racer and front pace rider, conceived and produced the first tire under what was subsequently patented as the Pye-Musselman process. The first of these tires was tried out by Alfred T. Goullet at the Newark Velodrome track in 1914 and proved very successful.

Mr. Pye continued in the manufacture of racing tires until his death in 1923, when his widow took up the reins and successfully continued the business in Newark, N. J.



1—Laying Cords for P-M Bicycle Tires. 2—Taking Off Cord Bands Cut Spirally. 3—Bands Hung Up to Dry. 4—Completed Two-Ply Flat Carcass Before Inserting Inner Tube.

As compared to factories producing regular types of bicycle tires the Pye plant is not large, but from a viewpoint of specialized manufacturing it is tremendously interesting. In sharp contrast to other lines of tire manufacturing where labor saving machinery is in use on every possible operation, here we find practically all the work is done by hand. This is considered good practice as frequent and rigid inspections are necessary in the process of manufacture, by reason of the hazardous service and high speeds to which racing tires are subjected.

Five types of tires are manufactured and are referred to as "six day racing," "road racing," "sprint," "front pace following" and "light sprint." These are made in two sizes of rim diameter, 24 and 28 inches and in several cross section sizes, the smallest being 15/16-inch and the largest 1 5/16-inches in diameter. The sprint and front pace following tires gage .044-inch thick, including tread, and weigh approximately 7 ounces complete with inner tube. The road racing tire which is the heaviest built is .078-inch thick with tread and weighs, complete with inner tube, approximately 10 ounces. All tires are inflated to a test pressure of 150 pounds and in regular racing service are inflated to 120 pounds pressure for the average sized rider, while for a heavy rider inflation of tires to 140 pounds is not unusual. The element of speed is an important factor as will be recognized when it is stated that 40 miles per hour is ordinary in racing and a speed of 75 miles per hour has been attained in a motor paced race.

Thus it will be seen that with the combination of a very light weight tire, high inflation pressures and high running speeds, the necessity of rigid and frequent inspections as construction progresses, becomes apparent in order to detect any defect that might endanger the life of the race rider, should the tire get into service.

The first step in making Pye-Musselman tires is the so-called weaving operation or building up the cord fabric. Only the best of long staple Sea Island cotton is used and this is supplied in spools. The cord is drawn from the spools and wound straight around a drum or cylinder. This drum is 22 inches in diameter, or larger, depending on the rim diameter of the tires to be made. It is made of wood, shellacked and polished. It is power driven and the cord is fed on and wound snugly under hand tension by an operator who must be expert in order to apply the proper and constant tension and lay the cord evenly. The completed operation results in a single layer of fabric, laid up with a single continuous cord, having the appearance and in fact being a weftless cord fabric. The cords are laid 70 to 100 per inch depending on type of tire for which the fabric is intended. Each drum is wound with sufficient cord for six 2-ply tires.

After the weaving operation is completed the fabric is given an impregnating bath of rubber cement which is allowed to dry. In this connection it is interesting to note that this factory has found toluol cement to be the best for the purpose. As the cement is allowed to set naturally without resorting to mechanical means, the time required for drying varies considerably with weather conditions, warm and dry weather contributing to the shortening of the drying period.

Next follows cutting the impregnated sheet. The angle of the cut is determined by the type of service for which the tire is to be made. Fabric in the so-called slower tires, such as for road racing, is cut at an angle of 48 degrees. That for tires used in motor paced races and for sprinting is cut at a greater angle, the faster the tire, the sharper the angle of the cords entering into its construction. The angle of the cut being determined, a metal straight edge is laid on the drum and a line penciled along the angle of the cut, which is made spirally around the drum. The cut is made by hand with a small knife resembling a safety razor blade.

The resulting strips are then paired and made into two-ply bands or pockets, the cemented sides being laid together with cords crossing at right angles and the band stretched around a plate glass template of exact size, the plies being smoothed and pressed together by hand. Maximum adhesion is obtained by running the band between two hand operated steel pressure rollers.

this operation being almost identical with band making for automobile tires. The bands are then hung up on horizontal poles about 1½ inches in diameter for further drying and are turned frequently on the pole so that no bumps or bulges will appear in the finished tire. It should be borne in mind that these tires are very thin, a complete casing with tread for sprint racing gaging only .044-inch thick, and that the least unevenness in structure is immediately detected by the rider.

After a close inspection the bands are again placed on the glass template and marked with four pencil lines. The two outer lines mark the extent of the edge trim, the two central lines, spaced one inch inward from the outer lines being used as markers for turning back the edges and also as a guide in centering the tread. The edges are accurately trimmed along the marked lines by hand with shears. The outer side of the band is again given a coating of cement and hung up to dry, being turned frequently as in the preceding operation.

Next, a single cord of the same size as that used in weaving the fabric is laid around the band exactly midway between the trimmed edge and the marker line on each edge of the band. The edges of the band are then folded over, or to use the factory term, "lapped back" to the penciled line. This operation is so accurately performed that it is referred to as "splitting the line," the trimmed edge being laid down on the center of the penciled line. The lapped edges are pressed down firmly by hand and then put through the rollers to secure greater adhesion. The center portion of the band is again cemented between the lapped edges and the bands are again hung up to dry, care being taken to frequently alter the position of the band on the pole.

The lapped edges are next sewed down with a single row of stitching on a sewing machine, the line of the stitching being about 1/16-inch from the inner edge of the lap or fold. A one-inch wide protecting strip or flap, to prevent chafing of the inner tube, is next attached. This strip is of "fruit of the loom" muslin and is cut on the bias by hand with a circular knife. This is sewed to the carcass with a single row of machine stitching close to the outer or folded edge of the carcass and with the raw edge of the flap outward so that a smooth surface will be presented to the tube. The single cord referred to above as being inserted before the edges were lapped is to prevent the stitching of the flap or protecting strip pulling out under the strain of inflation. The opposite edge of the flap is next stitched in a like manner, closing the opening, the inner tube, circular in form, being inserted in the carcass as the stitching progresses.

The next step is the final closing of the gap between the edges of the tire carcass. This is also a stitching operation being done on a specially equipped machine which sews in a cross hatching stitch with heavy thread and closing the edges tightly, the operator meanwhile exerting an even tension to prevent curling or buckling of the edges which would result from uneven stitching. During the operation the operator is careful to push the flap clear of the outer stitching.

The inner tube valve is now pulled into place and the final stitching of about one half inch on each side of the valve is performed by hand sewing or whipping. A surgeon's needle is used for this work as it penetrates the fabric with less effort than an ordinary needle of the round type.

The completed carcass is now run between rollers to flatten down the stitching and a one inch wide chafer strip of muslin called a "rim cut strip" is cemented over the rim side of the tire. The carcass is now ready for the tread.

Treads are of three kinds depending on the service for which they are to be used. Those for sprint racing or pace following being the fastest tires are .011-inch thick and are made from the best dental dam stock, smooth on both sides. The sheets for this are calendered and cured by a special process and then cut into strips 1 1/16-inches wide, employing the hand cut with straight edge and circular knife. Treads for road racing tires are of two kinds, one being flat, of even gage .045-inch thick, 1 5/16-inches wide and made from black compounded stock. This stock is run from the calender on a liner cloth of fairly coarse texture similar to osnaburg, the softened rubber taking the imprint of the liner and providing a pebbled or roughened surface which makes for better adhesion to the carcass. The other type is camel back in section, made from red stock, 1 9/16-inches in width, .090-inch thick in the center and tapered to a feather edge on each side. This also has the roughened back surface as described for the black tread.

In preparing the sprint tire treads or strips, as they are called, the first step is a thorough washing with toluol. The tread is then wound spirally edge to edge on a pasteboard mandrel similar to a mailing tube and about two inches in diameter. It is then given a coat of cement, allowed to dry to the proper degree of tackiness, when it is given a second coating and hung up to dry. The sprint tire tread is a straight strip and is applied to the flat carcass, stitched or rolled down by hand and lapped about ½-inch at the splice. The carcass is then put through the pressure rollers for the final stitching.

In the case of road racing tires, the tread stock is cut into strips to the proper length, the ends skived and the splice vulcanized, this being the only instance in the manufacture of racing tires where other than natural curing is resorted to; steam curing the carcass would result in too great a loss of resiliency. In preparing these treads for cementing they are first washed in a soda solution to remove every vestige of foreign matter and then air dried. Two coats of cement are applied at suitable intervals. These treads, being circular in form, are applied to the carcass over a liner cloth which is removed when the tread is centered. Otherwise this operation is the same as that of applying the straight tread to sprint tires. The final operation before packing is the inflation test to 150 pounds pressure.

As regards wearing qualities, this of course depends to a large extent on the care given the tires, the more careful riders using a canvas covering for tires when the bicycle is not in use to prevent abrasion of the exposed cord surfaces. In the six-day races records show that these tires have been run in excess of 6,000 miles which seems remarkable in view of the fact that the two-ply carcass is only .019-inch thick at the side and no sidewall protection is used as this, to the professional rider's point of view, would add unnecessary weight to the tire.

In an effort to further reduce the weight and make a faster racing tire, silk has been experimented with and tires weighing only four ounces made. If these are properly cared for and protected, good service can be expected but in general tires made from long staple cotton find more favor among professional race riders.

The manufacture of tubes for bicycle racing tires is a comparatively simple process but none the less interesting. The stock used is the best dental dam, .011-inch thick and prepared in the same way as described for sprint tire tread stock.

The sheet is cut by hand to the proper width and a little longer than the finished length. The strip is then folded exposing about ¼-inch for the longitudinal seam and rolled spirally around a pasteboard mandrel which has a smooth shellacked surface. The rolling or lapping is done in such a way that only the edges to be cemented are exposed. The stock is then washed with toluol and given two coatings of cement at suitable intervals. After the cement has dried to the proper degree of tack, the strip is laid out on a flat surface and the longitudinal seam is rolled down with a hand stitcher. The tube is then soapstoned and turned inside out and an air test applied. It is then cut to length the ends receiving two coats of cement at proper intervals. Next the ends are joined and a small hole made for the valve stem.

The valve used deserves special mention as it is specially designed to secure the maximum of strength with a minimum of weight. Where the stem joins the base it is recessed to receive the tie-in thread, no lock nut being used as this would add unnecessary weight, however slight, to the equipment. The valve being inserted, the rubber is pulled up over the recessed portion of the stem and securely tied in with stout thread. It is of interest to note that race riders, insisting on lightness in equipment, even refuse to use valve caps on the inner tubes.

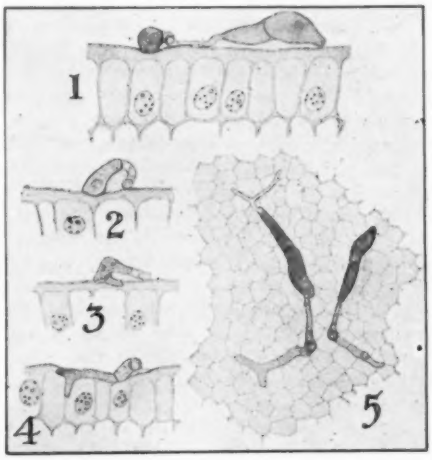
The South American Hevea Leaf Disease In Surinam

This Authoritative Article Is by the Director of the Agricultural Experiment Station at Paramaribo, Surinam, British Guiana

CONSEQUENT on the high prices paid for rubber at the commencement of the present century, the cultivation of Hevea was also taken up in Surinam, British Guiana, up to 1912 covering an area of about 2,000 acres. The young trees grew very satisfactorily in the heavy clay of the Surinam plantations, provided the soil was well drained. The quality of the product also met with favorable comment. The prospects of this crop therefore were not bad.

In 1915, however, a leaf disease, due to *Dothidella Ulei* (*Melamopsammopsis*), although of but slight significance up to that time suddenly began to cause very serious damage. After the wintering of the trees, all the budding leaves very frequently dropped in consequence of a serious infection by the leaf fungus. Young leaves developing again experienced the same fate, and when it occurred a third time, not only the branches of the 5 to 8 years old trees died off, but very often also parts of the trunks and occasionally even the whole tree down to the roots.

From the outset, Liberia coffee was grown between the rubber trees on most plantations. After three to four years when both crops would begin to interfere with one another it was thought there would be time enough to decide whether to do away with either the Hevea or the coffee, according to which would prove the least remunerative at the time and in the near future. Others even entertained the hope that Hevea would prove a useful shade tree to the coffee.



GERMINATED CONIDIA ON YOUNG HEVEA LEAVES

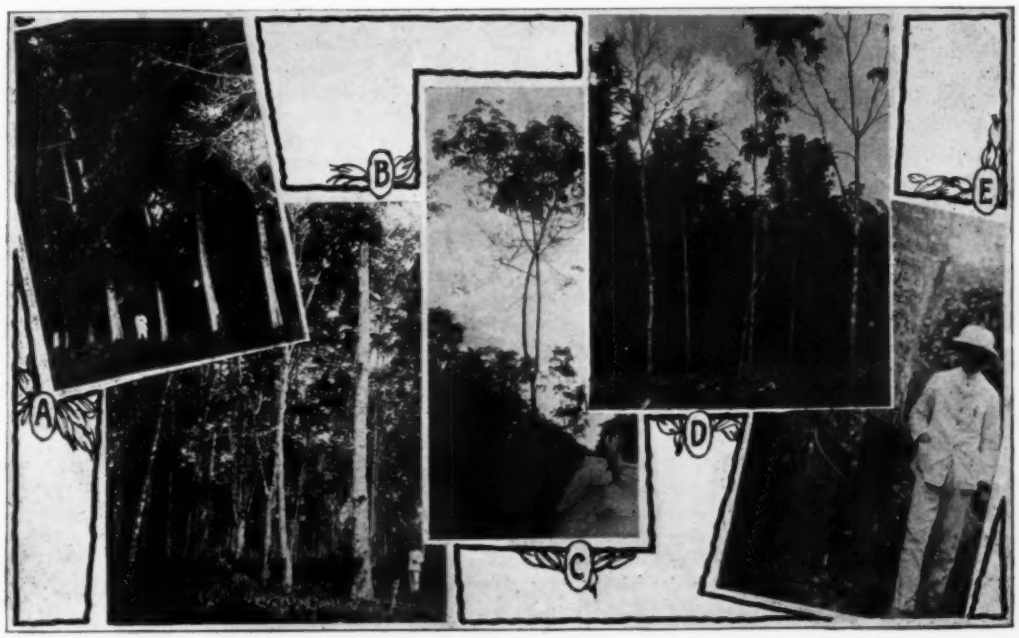
(1) Germinated conidia with appressorium.
(2) Appressorium.
(3) Appressorium 10 hours after germination of the conidia with a small germ tube under the certicuba.
(4) Germ tube 12 to 14 hours after germination of the conidia, with a small side branch between the cells of the epidermis.
(5) Conidia with germ tubes and appressorium and sub-cuticular germ tubes.

When some years later it appeared that Hevea in clay soil exercises a very unfavorable influence on the growth of the coffee trees, the rubber trees had just begun to be heavily ravaged by the leaf disease, while at the same time the rubber prices went down considerably. On account of these facts the Hevea was cut down everywhere in the mixed plantations and replaced by Koffiemama (*Erythrina glauca*), after which, within a comparatively short time, the drooping coffee trees made an excellent recovery.

The rubber plants in pure cultivations were tapped on different estates. In 1917 the highest rubber production was 11 tons, which rapidly went down thereafter and was nihil from 1920 to 1925. The tapping of the trees badly suffering from leaf disease was unprofitable.

The exceptionally high rubber prices in 1924 and 1925 encouraged a few planters to again tap the trees in the long abandoned rubber fields. In 1926 the harvest from about 8,000 to 10,000 trees was 6 tons of rubber.

If we consider the history and the existing remains of the former rubber industry it becomes most evident that the



A—Very Strong and Sound Hevea Trees, 17 Years Old, on a Dike, Plantation Clevia, Near the Coast. These Trees are Open to the Sea Breeze.

B—Fairly Good Hevea Trees, 17 Years Old, Plantation Clevia.

C—Very Weak Hevea Tree, 17 Years Old, Along the Railway, 49 KM. South of Paramaribo. The Trees Suffer Constantly from the Leaf Disease.

D—Three Hevea Trees, 17 Years Old, in the Arboretum at Zanderij I, 45 KM. South of Paramaribo. Badly Infected by the Leaf Disease. One of the Trees Without Any Leaves.

E—Tapped Hevea Trees, 16 Years Old. Plantation Beekhuizen.

farther we are from the coast the more seriously the trees are attacked by the leaf disease and the more complete is the failure of the cultivation experiments.

A few groups of trees about 8 kilometers from the coast and standing freely and open to the sea breeze are unaffected by the leaf disease and are today healthy and vigorous. The nearer we approach the coast the drier the climate is found to be. The data of the Meteorological Department of Surinam show that the rainfall near the coast up to a distance of 5 to 8 kilometers from the sea is more than one-fourth less than the rainfall farther from the coast.

The average rainfall during the past five years was 1,472 mm. in Coronie, 3 km. from the coast; 1,485 mm. in Nickerie, 5 km.; 2,047 mm. in Paramaribo, 15 km.; and 2,075 mm. in Kabelstation, 130 km. from the coast.

The germinated spores (conidia) of the leaf fungus must remain 10 to 12 hours on the very young dew-covered leaf in order to be able to penetrate into the tissue. If the dew evaporates before that time the germinated spores will die before having infected the leaf. Where formerly the Hevea fields bordered on one of the wide rivers it became very noticeable that the row of Hevea trees growing in the open along the river was healthy and robust, whereas farther inland the trees very seriously suffered from the leaf disease and remained, therefore, weak and backward. The wind dries up the dew on the trees along the river much more quickly than in the misty fields where the germ tubes have sufficient time to penetrate the leaf.

While rubber cultivation in the region of the existing plantations along the large rivers and particularly farther towards the interior must be emphatically discouraged on account of the unfavorable results obtained, the possibility remains that the Hevea along the coast up to a distance of about 5 to 8 kilometers from the sea will not be much hampered by the leaf disease owing to the considerably drier climate and the strong sea breeze, in which case it is not unlikely that Hevea growing will prove profitable in Surinam.

Experience gained in Demerara with rubber cultivation exactly covers that which has been said above in regard to Surinam. In Demerara the cultivations have remained only in the immediate vicinity of the coast, whereas the others have been ruined by the Hevea-leaf disease. Demerara exported 30 tons of Hevea rubber in the past year. About 3 kilos of rubber per tree per annum were obtained on one of the sugar plantations along the coast.

Should, however, experiments be required to demonstrate whether the Hevea cultivation along the coast is really possible and profitable, these experiments should not be carried out with less than 5,000 to 10,000 closely grown trees, if the data are to be of any use, for the leaf disease cannot develop to its full virulence on trees in small plots or in fields with the trees wide apart.

COATING FOR MOLDED ARTICLES

The problem of giving to molded rubber articles a bright shining surface and prevent sulphur bloom during storage is said to be solved by the use of a preparation of collodion applied to the molds.

The collodion solution is made by dissolving 12 pounds of celluloid scrap, cut in small pieces, 2 pounds of castor oil and 2 pounds of aldehyde-ammonia in 92 pounds of 90 per cent denatured alcohol, 46 pounds of amyl acetate and 46 pounds of ethyl ether. The clear solution is decanted from the sediment and used for painting mold cavities. Hexa or furfuramide may be used instead of aldehyde-ammonia. The solution is made cold, and as the solvent is very inflammable, suitable precautions must be taken for the prevention of fires.

This preparation is suggested by Dr. Werner Esch, the German rubber technologist, who further states that instead of celluloid scrap, which is not uniform in quality, nitrocellulose moistened with alcohol can be used with advantage, especially for articles of brilliant color because of its greater dependability for clearness and brilliancy.

Edison and Florida Rubber

Encouraging Experiments Raise Noted Inventor's Hopes That America Will Yet Supply Much of its Needs

Charles Edison, son of Thomas Alva Edison, when interviewed while visiting in Los Angeles by a representative of the INDIA RUBBER WORLD as to the prospect for rubber growing in Florida or other parts of the South, stated that his famous father is so much encouraged by the latest reports received from his experimental station near Fort Myers on the Gulf Coast that he has directed his assistants there to redouble their efforts, if possible, to develop certain promising species of rubber-bearing plants so that from them one may be obtained that will not only give a maximum latex yield but will also be capable of mechanical handling. Mr. Edison said that his father did not seek profit from the cultivation of the plants, but was anxious to prove that America can grow rubber in perhaps annual crops on a commercial basis and put itself in a more independent position.

Whether the latex will be derived from *Hevea brasiliensis*, of which trees the elder Edison has many fine specimens on his Florida estate, or from some other rubber-bearing tree, shrub, or plant, of which he has over 3,000 under observation, can not yet be stated; but some interesting information along that line may soon be forthcoming. Mr. Edison has also given his engineering staff the task of devising a process for large scale latex extraction that will replace manual milking and help to offset the difference in labor cost between Florida and the Far East. The progress along this line is said to be quite satisfactory.

Florida, Mr. Edison observes, may lack the heavier rainfall of the equatorial regions where Hevea flourishes, but it is warm throughout the year, and it has in the 5,000,000 acres of Everglades and other low-lying land a peculiarly favorable sub-soil moisture. The draining of the Everglades for plantations, it is held, would not be a difficult engineering job, and when done a soil condition would be obtained that would rival that prevailing in the greater part of the valley of the Amazon, the original home of the Hevea.

AMERICAN TIRE FABRIC EXPORTS

During the calendar year 1926 the exports from the United States of cord tire fabrics totaled 787,105 square yards, value $386,438; shipments of tire fabrics other than cord amounting to 1,215,973 square yards, value $463,324. As a market for these goods, Australia easily led, taking 704,355 square yards of cord tire fabric, value $345,223, and 499,805 square yards of tire fabric other than cord, value $245,297. Canada followed with 31,960 square yards of cord tire fabric, value $13,786, the shipments other than cord totaling 554,063 square yards, value $162,197. Other important customers were: Cuba, British Malaya, Sweden, Mexico and the United Kingdom. It will be noted that fabric other than cord has been preferred by most of the foreign countries listed, the leading exception being Australia, followed by Sweden and Mexico. A detailed tabulation would be as follows:

TIRE FABRIC EXPORTS

	Cord		Other Than Cord	
	Square Yards	Value	Square Yards	Value
France	1,227	$572	622	$313
Sweden	30,236	13,050	200	110
United Kingdom	221	222	22,759	5,922
Canada	31,960	13,786	554,063	162,197
Mexico	14,785	10,714	9,770	6,017
Cuba	.....	.....	42,620	16,076
Argentina	.....	.....	5,573	1,811
Chile	.....	.....	7,289	1,759
Colombia	.....	.....	10,428	3,566
British Malaya	3,768	2,083	36,853	9,670
Australia	704,355	345,223	499,805	245,297
Other countries	553	788	25,991	10,586
Totals	787,105	$386,438	1,215,973	$463,324

Pipe Joint Rings

Leading Types and Construction for Air, Water, Steam, Oil, Natural or Artificial Gas Pipe Line Service—Pipe Line Mileage and Number of Joints

THE thousands of miles of pipe lines in service for distributing oil, natural gas and manufactured gas to consumers are built of sectional pipes and fittings joined against leakage by rubber packing rings held in place by special compression fittings. Oil pipe lines are constructed of steel without threaded ends or of bell and spigot form of cast iron pipe fitted to receive joint packing rings. These lines range usually in diameter from 2 to 12 inches. Not only can pipe joints be quickly applied at much less cost than screw or flanged joints but they render the line permanently leak-proof and flexible. A clear idea of the flexibility is obtained from Figure 1 which illustrates a cross-country, natural gas pipe line in which the joints take up expansion and render the line tight against leakage regardless of its crookedness.

Prominent among the pipe joint couplers in extensive use are the Dresser, Dayton, Victaulic, Southwestern and Hi-Press. Each of these types is used for the same general applications and solves the mechanical difficulties by different designs in which dependence is placed on rubber for the packing effect.

Dresser Couplings

One of the most difficult materials to conduct by a pipe line without loss by leakage is manufactured gas. The reason being that such gas contains a "drip oil" comprising a complex mixture of materials having strong solvent action on rubber. For manufactured and by-product gas Dresser couplings are equipped with indestructible gaskets of two constructions.

The body of these gaskets is of a rubber composition which offers high resistance to the solvent action of oil. The wedge-like edge of the gaskets is protected by plies of specially treated duck or by plies of duck with an outer layer of soft lead as shown in Figure 2. In this way the rubber of the gasket is sealed off from all contact with the contents of the pipe line and all destructive action of the material in the line is obviated.

The principle of the pack of the Dresser joint in a steel pipe coupling is to draw up on the square section of the joint rings, one of which is supported at either side of the pipe joint in a flanged holder surrounding the pipe. Between the gasket flanges, a steel sleeve is located over the pipe ends to be packed. On the inner circumference of the sleeve is a square rib against which the pipe ends abut. This device holds the coupling from displacement lengthwise. The ends of the sleeves are flared outwardly to receive the wedging edge of the gasket when the flanges are drawn up against the sleeve by several bolts encircling the coupler.

The Dayton Joints

In the Dayton joints two types of gaskets are standardized for oil and gas pipe line service. Both are compounded to have highly resistant qualities for service where an excessive deposit of gasoline or gas vapors is encountered.

A fabric tipped rubber gasket is also used, in which several layers of heavy duck are molded into the rubber flange. The gasket thus protected is applied in the same service where an asbestos gasket might be used. The various sections are suited to making original joints and to different types of repair work in stopping leaks without disturbing the line.

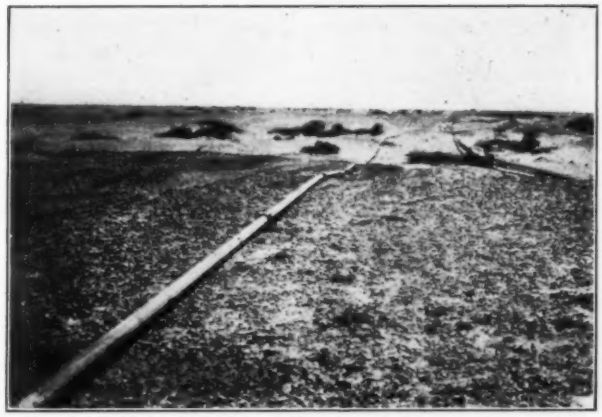


Fig. 1. Natural Gas Line Laid by the London & Pacific Petroleum Co. in Peru

Victaulic Joint

The Victaulic joint consists of two half housings, two bolts and nuts and a rubber leak-proof ring represented in the group Figure 2. In making the joint the leak-proof ring is stretched over the pipe ends and the two half housings bolted over it, the edges of the housings engaging grooves in the pipe ends, thus holding the joint together and protecting the leak-proof ring from damage on all sides.

Southwestern Pipe Rings

The Southwestern pipe ring, designed for joining bell and spigot pipe for gas mains, is also shown in Figure 2.

In cross section the rubber ring is U form, of firm tough composition. A section is shown through a joint made by packing the bell first with a certain amount of jute, against which is placed a rubber ring followed by a filling of cement containing 25 per cent of sand. The cement hardens in the channel formed around the inside of the bell end and effectually locks the pipes together.

A second form of joint using the same style ring is also shown. In this instance the bell is packed with braided jute packing, then the ring is placed so that its square section bears on the straight wall of the bell while its outer flange will reach into the channel in the bell when forced into place, thereby being caulked up with lead which is poured and then driven home. As in the first case the material packed into the channel holds the joint firmly in place.

It is claimed that when a rubber ring is put into a bell and spigot gas joint and sealed from the atmosphere its life is rendered indefinitely long because the ingredients of the gas only cause the rubber to swell and the distension completely prevents the escape of gas. Such a joint is permanently self healing against leakage beside being simple to make and low in cost.

Hi-Press Coupling

The Hi-Press coupling joint is applied under heavy pressure. The circular gasket is approximately rectangular in cross section with a circumferential outer groove. The ring is built up of bias cut plies of a fine cotton frictioned fabric. The inner and outer faces of the ring are covered with thin rubber and on the sides the cut fabric plies are exposed. The ring is made about 1¼-inch larger in diameter than the pipe and about ⅛-inch longer than the inside diameter of the coupling so that when inserted it is under compression.

To make a joint a solution of either clay, litharge and glycerine, or pure Portland cement is pumped into the coupling at 2,000

pounds pressure using a standard Alemite industrial fitting on the coupling and standard garage equipment. This is accomplished in less than a half minute. Also a heavy automobile body soap can be used so that the Alemite fitting can be removed to allow the soap to flow out and the coupling be taken apart.

The coupling itself is rolled from an electric welded band and galvanized inside. This makes a very accurate coupling as to tolerances, especially as to the groove which is rolled in the end of the pipe at the mill. The cost of this coupling is estimated to offset the cost of oxywelding in the field. The larger the diameter of the pipe, the greater the saving, as no bolts of any kind are used as in standard couplings.

The internal pressure of the line is not depended on to help hold the joints tight as in some couplings. The pressure is applied through the Alemite fitting confining such air as is in the chamber which with the fluid acts as a cushion to follow up the cold-flow, which is very slight in this design of coupling and gasket, before the cement sets. The pressure of 2,000 pounds will drop only to 1,100 or 1,200 pounds after three or four hours and then remains constant. Bolted couplings show a considerable amount of cold-flow and should be tightened up four or five hours after the initial tightening which is not always convenient to do in the field.

Joint rings are also used in special clamps for stopping leaks in pipe lines. These are of special design, attachable to the pipe without disturbing the old joints.

Pipe Line Shock Absorbers

In air, water, gas, steam and brine pipe lines the material conveyer is not incompatible with the use of special rubber expansion joints used as shock absorbers for preventing the transmission of vibrations.

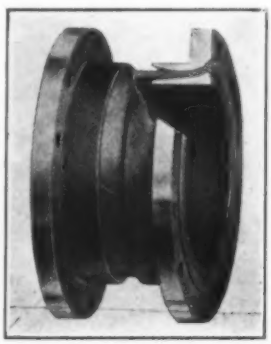


Fig. 3.
Gradon Expansion Joint

Such flexible members not only dampen vibration between machinery and the piping connections but they relieve the strains that may result when heavy pipe flanges are bolted up in imperfect alinement or when there is contraction or expansion of machinery casing or piping.

The expansion joint illustrated in Figure 3 is designed on simple practical lines to prevent damage from the causes indicated.. It consists primarily of an inner and outer clamp ring, regularly of wrought iron or steel, so arranged that the outer clamp ring forms the flange that connects to the pipe or machinery. Specially selected endless combination rubber and fabric tubing is held between the two clamp rings so that when the flange bolts are tightened the end of this tubing is forced outward and forms a gasket joint. These rubber joints are of wrought steel construction made in standard sizes from 6 to 48 inches in diameter.

The field for rubber expansion joints is steadily enlarging because a better understanding is gaining acceptance with engineers as to what such joints will accomplish and under what conditions.

Pipe Mileage and Number of Joints

The mileage of pipe lines used in the United States in the oil, natural gas and manufactured gas industries is estimated to be as follows:

Pipe Lines	Miles
Oil gathering	85,000
Oil transportation	85,000
Natural gas	175,000
Manufactured gas	86,000
Total	431,000

The fact that some types of pipe joint couplings require two rubber gaskets and others only one renders it impossible to approximate the number of joint rings used in laying the above mileage. Taking the average pipe section at 17 feet or 310 per mile there would be 133,610,000 rubber joints in 431,000 miles of pipe. This total does not include the mileages used for by-product gas, steam and water.

The outlet for rubber in pipe joint rings is certainly large and increasing with the growing exploitation of oil and extensions into other industrial fields.

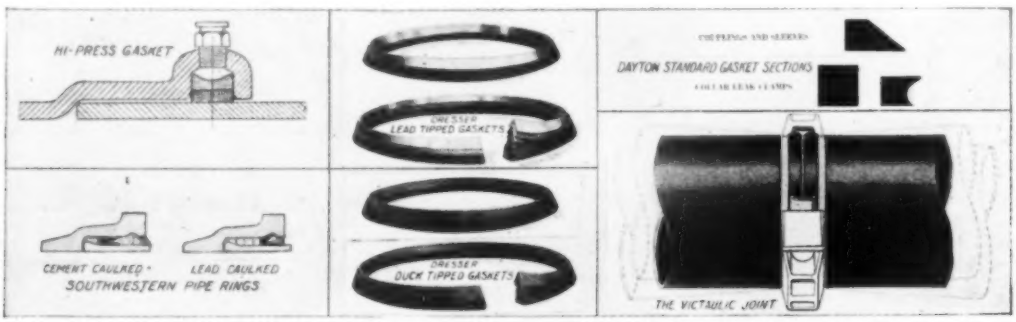


Fig. 2. Types of Pipe Joint Rings for Air, Water, Oil and Gas

American Society Testing Materials Annual Meeting Committee D-13

Rapidly growing interest in the work of Committee D-13 of the A. S. T. M. is evident in the broadening of its scope and the attendance at the sessions of the annual meeting held June 20 to 24 at French Lick, Indiana.

The committee submitted three new tentative standards: (1) Tolerances and Test Methods for Certain Light and Medium Cotton Fabrics; (2) Tests for Cuban (jute) Raw Sugar Bags; (3) Identification of Textile Fibers and Their Quantitative Determination in Mixed Goods.

The following revisions were submitted on the four existing standards: (1) Methods of Testing Cotton Fabrics; (2) Specifications for Tolerances and Test Methods for Tire Fabrics Other than Cord Fabrics; (3) Specifications for Tolerances and Test Methods for Cord Tire Fabrics; (4) Specifications and Tests for Osnaburg Cement Bags.

Six tentative standards were recommended for advancement to standard as follows: (1) Specifications for Textile Testing Machines; (2) Specifications for Tolerances and Test Methods for Cotton Yarns, Single and Plied; (3) Specifications for Tolerances and Test Methods for Cotton Sewing Threads; (4) Specifications for Tolerances for Numbered Cotton Ducks; (5) Specifications for Tolerances and Test Methods for Electrical Silk and Cotton Tapes; (6) Definitions of Revised Terms Relating to Textile Materials.

Rubber Character Dolls

A Radical Departure from Conventional Models Producing Lifelike Effects

German Rubber Character Doll

THE familiar straight molded hollow rubber doll that has been the conventional form for many years is no longer the only type available. German rubber toy makers have designed character dolls of special attractiveness, one of which in the form of an infant with arms extended and legs naturally bent is here pictured.

A doll of this or similar design involving lifelike features and action is obviously of greater interest than those in rigid postures. The execution of such character designs in molded rubber forms is due to redesigning the two-part molds, making it possible to easily remove the cured article from the mold.

The halves of an ordinary two-part doll mold separate along a surface in a straight plane. In a mold for character dolls the halves necessarily separate along a surface of most varied contour, according to the posture of the doll and the flexing and extension of its limbs. This means careful modeling of both the object and its corresponding mold in order to meet practical working conditions.

The modeling of the separating surfaces of the two-part mold in which the doll pictured was produced is evident in the group pictures. *A* and *B* are two views of the half of the mold which shapes the back of the doll, *A* shows the cavity and *B* the doll lying face uppermost in the cavity. Similarly *C* and *D* represent two views of the opposite half of the mold which shapes the front of the doll, *C* showing the cavity and *D* the doll lying back uppermost in the cavity.

Molds of this sort are somewhat expensive initially and are made either in iron or soft metal. In either case they are as conveniently worked as the old form of mold for the reason that the object to be molded is made in form and size to approximate the shape of the mold. This is done by cutting calendered, uncured sheet rubber to form after appropriate metal templates and seaming the several parts by hand.

Before seaming the object up completely a suitable quantity of alcohol is placed inside to serve as the inflating medium and to distend the rubber with pressure against the walls of the cavity. Thus the cured doll retains all the details engraved on the surfaces of the cavity and receives the characteristic effects very perfectly. After mold curing, the doll is coated with a body color of vulcanizable rubber enamel and the hair and features are painted with colors of the same quality. This surfacing offers the advantage that the coating thus formed adheres perfectly and does not crack. It is not only durable but withstands frequent cleaning with soap and water without injury. The rubber enameling necessitates a second special vulcanization to render it tough and durable.

Where the shape of the doll is simple it is possible to machine cut the article and form it under pressure before mold curing. In this case each mold half comprises a die and counter, the latter being the mold cavity. The operation consists in laying over the cavity a piece of calendered sheet then forcing it into shape by insertion of the die. The halves of the object being thus formed each in its own cavity is fitted roughly into the finished shape by uniting the edges by hand, alcohol being inserted before closing. The article blanks are then ready for the curing mold in which they receive final form and vulcanization. The dolls produced by the methods described are very attractive due to their lifelike attitudes and coloring. These popular and durable dolls are the production of The Hanover Rubber Co., Hanover, Germany.

A—EMPTY MOLD CAVITY, BACK OF DOLL. *B*—MOLD CAVITY, BACK OF DOLL WITH DOLL IN PLACE. *C*—EMPTY MOLD CAVITY, FRONT OF DOLL. *D*—MOLD CAVITY, FRONT OF DOLL WITH DOLL IN PLACE.

EXPORTS OF CHICLE FROM VERA CRUZ, MEXICO, FOR THE FIRST quarter of the present year totaled 58,756 pounds, value $27,759, as compared with 34,773 pounds, value $18,311, for the corresponding three months of 1926. The rubber shipments for the January-March period of 1926 amounted to 32,206 pounds, value $7,305, as against the total for the 1927 quarter of 58,505 pounds, value $15,106.

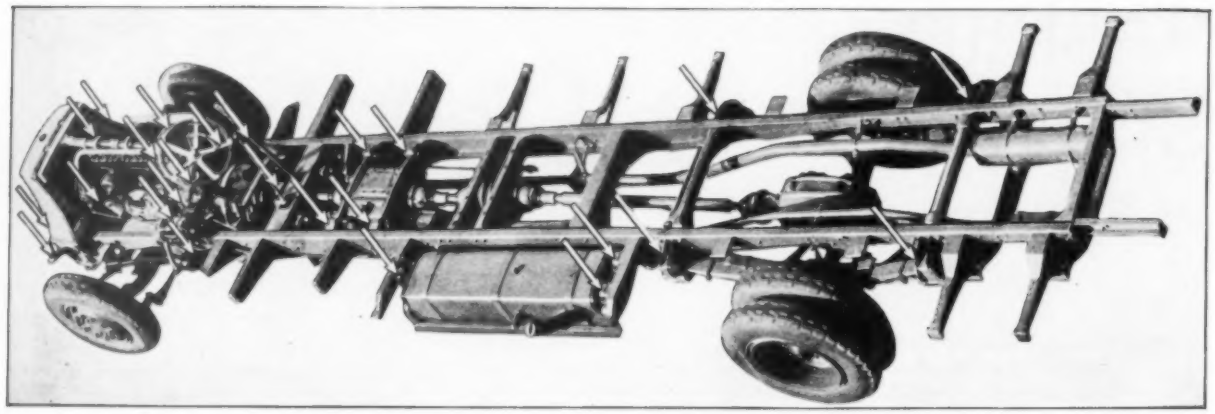


Fig. 1. Twenty-five Applications of Rubber Insulators to a Mack Bus Chassis Are Indicated by Arrows

Rubber Cushioning In Buses

Shock Insulators of Compressed, Resilient Rubber Prolong Life and Increase Efficiency of Bus Operation Besides Assuring Comfort to Passengers

THE use of rubber for eliminating vibrations in motor vehicles began with the application of rubber shock insulators to springs of motor trucks. The favor with which this improvement was regarded has led to the extension of the system for the protection of motor vehicles, particularly buses, at every vital point. Compressed resilient rubber thus applied prolongs the life and efficiency of operation of the vehicle and assures comfort to the passengers. At the springs it is applied to cushion road impact; at the engine to dampen vibrations; at the transmission to assure silence; at the steering assembly to reduce fatigue of the driver; at the gas tank to relieve twisting strains; on the drive line to absorb twist when overcoming inertia; at the radiator to prevent leakage.

A general idea of the distribution of rubber cushioning in a bus chassis may be had from Figure 1, in which 25 points of applications are indicated by arrows.

Beginning at the left, the radiator is mounted on rubber pads and rubber gaskets are used in the water circulating system between engine and radiator. There are no fewer than eight rubber cushioned points in connection with the motor and steering mechanism. These include the rubber cushions on which the engine rests, those insulating the steering column and those in the steering wheel. Back of this group are the rubbers on which the transmission rests.

A clearer view may be seen in Figure 2 *B*, where the ends of the cross arms of the transmission are housed in rubber insulators under compression in steel boxes bolted to brackets on the sides of the chassis frame. The same principle is applied by use of the torque insulator in the driving line between the transmission and the engine. Here four big blocks of live rubber compressed into cups between opposing arms interpose a responsive cushion between the power plant on one side and the transmission units on the other.

On the outside of the chassis frame in Figure 1 may be seen the three-point rubber insulation on which the gas tank is carried. To the rear are located shock insulators for the rear springs.

A group of four different forms of rubber shock insulators designed to apply to front and rear springs is pictured in Figure 2 *A*. These are used under compression, each insulator being encased in a close fitting steel holder by which attachment is made to the spring shackle. There is no contact between the spring tips and the chassis except through one of these rubber insulator blocks.

While rubber cushioning has been more fully developed for buses, it is no less desirable as applied to pleasure cars and motor trucks for all uses. Reducing vibrations is absolutely worth while on trucks for heavy duty where the damage to the engine and vehicle is rapid and complete in the absence of such protection.

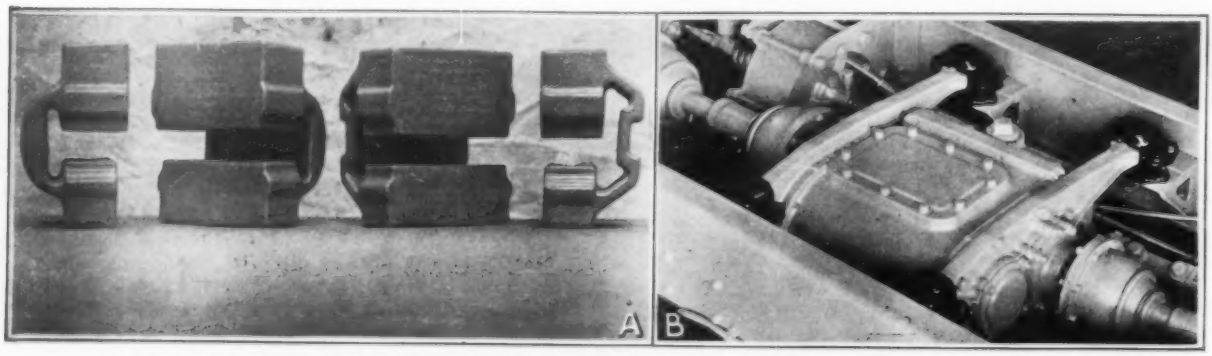


Fig. 2. (A) Front and Rear Rubber Spring Shock Insulators. (B) Housed Rubber Insulators Supporting Transmission Case

American Rubber Technologists

CHARLES ROGERSON HAYNES, chem. *b.* July 18, 1882, Dedham, Mass.; S.B. in chem., M. I. T., 1904; chem. Boston Rubber Shoe Co., Malden, Mass., 1904-1907; chem. and dept. mgr. Boston W. H. & R. Co., Cambridge, Mass., 1907-1912; chf. chem. and asst. supt. Mechanical Rubber Co., Cleveland, O., 1912-1915; supt. Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn., also in charge of Lycoming Rubber Co., Williamsport, Pa., and the St. Louis, Mo., plant of Goodyear's Metallic Rubber Shoe Co., 1915-1919; technical supervisor footwear factories, U. S. Rubber Co., since 1919. *Member:* New Haven Country Club, New Haven, Conn., Kiwanis Club, Masons, Shriner. *Address:* 625 Orange street, New Haven, Conn.

Norman Gibson Madge, chem. *b.* March 9, 1885, Toronto, Can.; U. of Toronto, 1908; research viscose and cellulose acetate, Boston, Mass., 1908-1911; instructor, U. of Toronto, 1911-1912; chf. chem. Continental Rubber Co. of N. Y. and Continental Mexican Rubber Co., Torreon, Mexico, 1912-1915; chf. chem. Jenkins Bros., 1915-1918; chf. chem. Revere Rubber Co., Providence, R. I., 1918-1920; director of laboratories mechanical rubber goods factories U. S. Rubber Co. since 1920. *Member:* Amer. Chem. Soc., Masonic bodies, British Empire Club, Metacomet, Providence Engineering Society. *Address:* 24 Doane street, Providence, R. I.

Michael Berman, chem. *b.* May 12, 1896; *Cum laude* in chem., Harvard Coll. 1917; asst. chem. Fisk Rubber Co., 1917-1918; Chemical Warfare Service, research chem. Gas Offensive Division, Co. M, Third Battalion, Edgewood Arsenal, Baltimore, Md., June, 1918-December, 1918; chf. chem. Whitall Tatum Co., Keyport, N. J., 1919-1920; chf. chem and tech. supt., Gutta Percha & R. Mfg. Co., New York, 1920-1926; specif. engr. mechanical goods specifications and design for Hewitt R. Co. and Gutta Percha & R. Mfg. Co., Buffalo, N. Y., since 1926. *Member:* Amer. Chem. Soc. *Address:* 196 Crescent avenue, Buffalo, N. Y.

A. E. Plumb, chem. *b.* Dec. 12, 1885, N. Bangor, N. Y.; Franklin Acad., Malone, N. Y., 1904; B.Sc. Syracuse U., N. Y., 1909; asst. inspector of gas State of N. Y., 1911-1916; Canadian Rubber Co., Montreal, Can., 1916-1917; C. W. S. Div. of Gas Mask Research Amer. U. Exper. Sta., Washington, D. C., 1918; chf. chem. F. J. Maywald, Newark, N. J., 1919-1920; chf. chem. Hodgman Rubber Co., Tuckahoe, N. Y., 1920-1921; chf. chem. Parker, Stearns & Co., Brooklyn, N. Y., 1922; chf. chem. Continental Rubber Works, Erie, Pa., 1922-1926; mech. and molded goods compounder, Republic Rubber Co., Youngstown, Pa., since 1926. *Author:* Weather Aging of Gas Mask Fabrics, with G. St. Perrott. *Member:* Alpha Chi Rho. *Address:* 22 Lincoln Apts., Youngstown, O.

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Robert John Bonstein, chem. *b.* March 26, 1889, West Pittston, Pa.; Wyoming Seminary, Kingston, Pa.; B.S. chem. U. of Pa., Philadelphia, Pa., 1912; acid division, Philadelphia Rubber Works Co., Philadelphia, Pa., 1917; charge of anal. and phys. laboratories, Kelly-Springfield Tire Co., Akron, O., 1917-1923; chf. chem. Swinehart Tire & R. Co., Akron, O., 1923-1924; chf. chem. Lambert Tire & R. Co., Akron, O., Jan. 1, 1924-Apr. 15, 1927; chem. development department Seiberling Tire & R. Co., Akron, O., since Apr. 15, 1927. *Member:* Engineers Club of Phila., A. C. S. *Address:* 311 Crestwood avenue, Akron, O.

John Elmer Cavelti, chem. *b.* July 8, 1896, Stratford, Conn.; B.S. Wesleyan U., Middletown, Conn., 1918, M.S. 1920; Yale U. part time graduate work, 1922-1926; chem. U. M. Cartridge Co., Bridgeport, Conn., 1917-1919; asst. chem. 1919-1920; instructor in chem. 1920-1924, asst. prof. in chem. since 1924 at Wesleyan U.; research chem., Goodyear Rubber Co., Middletown, Conn., since 1921. *Member:* A. C. S., A. A. A. S., Amer. Asso. University Professors, Commons Club, Delta Sigma Rho, Phi Beta Kappa. *Address:* 59 Home avenue, Middletown, Conn.

Robert Berkowitz, chem. *b.* July 5, 1893, Wilkes-Barre, Pa.; B.S. Pa. State Coll., 1916; chf. chem. Metal Hose & Tubing Co., Brooklyn, N. Y., since 1916. *Member:* A. C. S., A. S. T. M., Beta Sigma Rho, Mason. *Address:* 1087 Union street, Brooklyn, N. Y.

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Frederick C. Thorn, chem. *b.* Aug. 11, 1891, Brooklyn, N. Y.; Columbia U. 1912; Safety Insulated Wire & Cable Co., 1913-1915; United & Globe Rubber Co., Trenton, N. J., 1916-1917; Natl. Metal Molding Co., 1919-1920; Manhattan Rubber Mfg. Co., Passaic, N. J., 1921-1923; chf. chem. since 1923, Garlock Packing Co., Palmyra, N. Y. *Member:* Amer. Chem. Soc., Inst. Rubber Indus., Phi Lambda Upsilon. *Address:* Palmyra, N. Y.

Oliver Mills Hayden, chem. *b.* Aug. 20, 1893, Windsor, Conn.; B.A., chem. and biology, Clark U., Worcester, Mass., 1914; Phoenix Mu. Life Ins. Co., Hartford, Conn., 1914-1915; Hartford Accident & Indemnity Co., Hartford, Conn., 1915-1917; U. S. A., 1917-1919; Fisk Rubber Co., Chicopee Falls, Mass.,1919-1926; rubber chemical demonstrator, E. I. duPont de Nemours & Co., Wilmington, Del., since 1926. *Member:* First Lieut. Quartermasters' Reserve Corps, U. S. A., Mason. *Address:* 617 W. Twenty-seventh street, Wilmington, Del.

Carl E. Frick, chem. *b.* June 17, 1894, Akron, O.; B.Sc. U. of Akron, 1916; M.A. Ohio State U., 1917; Ph.D. U. of Wis., 1923; gas chem. Amer. U. Experiment Station, Washington, D. C., 1918; instructor chem. Case School App. Science, Cleveland, O., 1919; chem. Philadelphia Rubber Works Co., Akron, O., 1920-1921; chem. Van Cleaf Bros., Chicago, Ill., since 1923. *Member:* A. C. S., Sigma Xi, Phi Lambda Upsilon, Masons, High Noon Club of Chicago. *Address:* 6756 Chappel avenue, Chicago, Ill.

George Robert Milligan, chem. *b.* June 4, 1902, Detroit, Mich.; Syracuse U., 1924; asst. chem. since 1924, Garlock Packing Co., Palmyra, N. Y. *Member:* Alpha Chi Sigma. *Address:* Palmyra, N. Y.

THE INDIA RUBBER WORLD'S *brief biographies of American rubber technologists are valued by our readers because they record the accomplishments of the men in charge of the research, development and control work of the rubber manufacturing industry.*

Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication.

Colors of Rubber Floors Defined

The Various Combinations of Colors in Flooring Have Been Made Possible Through the Development of Organic Colors by Rubber Research Chemists

ALLAN WILLIAMS

SINCE the method of mottling rubber goods was invented years ago, there have been various combinations of colors employed in the manufacture of rubber flooring. There are no standard names for each color of flooring as one concern may call a color Napoleon gray and another company may call the same color in their stock room, French gray. The colors used most widely at present are gray, red, blue, green, brown, white and black. Where a mottling effect is employed, the architects specify the colors used in the marble trade as a rule; it may be a different name to the rubber trade, and yet the color is the same.

The constant demand by architects and decorators for something new has kept rubber concerns experimenting with new colors for the flooring industry. One of the big changes is flooring for the sunporch, which had formerly been red squares with black feature joints. The new design now being advertised calls for a plain dark green border, and medium green with short stippled light yellow mottling in the field, giving a grass effect. The first color in the combination is the background. For instance, if a design calls for green and white, the body or background would be green, with white mottling, and again should the design call for white, red and black, sometimes called white mixture, the color would be a white background with red and black mottling. Mottling in different colors ought not be overdone, and again there should not be too little mottling. A happy medium is the object to be aimed at in the making.

The meaning of different colors to the inexperienced rubber man is quite a puzzle if he has no understanding of them and wishes to acquire certain color effects. Therefore a brief descriptive outline of colors is given below:

Black and White is a black background with white mottling.

White and Black is just the opposite with a white background with black mottling. The white has a tint of gray in it in this case. It is sometimes called Italian when lightly mottled.

Black and Gold is a black background with yellow mottling.

White, Red and Black, sometimes called white mixture, is a white background with red and black mottling.

White, Green and Black is a white background with green and black mottling.

Black Paisley is a black background with red and white mottling. This is sometimes called black mixture.

Red Paisley is a red background with a black and white mottling, sometimes called red mixture.

Gray Paisley is a gray background with black and red mottling, sometimes called gray mixture.

Pink Tennessee is a pinkish gray with light black mottling.

Napoleon Gray is a blueish gray with light mottling of gray and white.

Verde Antique is a black background with green and white mottling.

Dark Sienna is a dark brown with an orange yellow mottling.

Light Sienna is a dark orange yellow with dark brown mottling.

The colors must be fast colors as the washing of the floors may affect them and, moreover light will sometimes turn a white tile to cream color. Some mineral colors do not hold their color as well as vegetable coloring. These matters should be in the hands of a competent rubber chemist who would be responsible for the quality of the tiling turned out by the factory.

GROWING RUBBER IN PHILIPPINES

The Governor General of the Philippines, Major General Leonard Wood, recently in the United States, believes in the possibilities of rubber cultivation in the Philippine Islands. General Wood has stated that, if only the available land is utilized, the Islands can grow all the rubber needed by the United States, and he anticipates that rubber will prove to be the favorite crop. Large capital, however, is said to be necessary for carrying forward such undertakings, General Wood also favoring the granting of leases on rubber lands up to 50,000 acres for a period of twenty-five years.

EXPORTS FROM BRITISH HONDURAS OF CHICLE ROSE FROM A TOTAL for 1925 of 334,892 pounds, value $154,875, to 530,848 pounds, value $203,478, for 1926. During 1925 the entire shipment went to the United States, the figures for 1926 being 504,178 pounds, value $192,104.

What the Rubber Chemists Are Doing

The Oxidation of Rubber[1]

M. Leon and W. N. Lister

THE object of the present research was to investigate the following points: (a) The relative rates of oxidation of various commercial rubbers; (b) The rate of oxidation of rubber, from the latex stage to the pure hydrocarbon, by the removal, stage by stage, of the extraneous substances; (c) The effect of various organic compounds on the rate of oxidation; (d) The possibility of an accelerated aging test by the measurement of the rate of absorption of oxygen.

Oxidation of Various Commercial Rubbers

The apparatus employed was a flask connected with a measuring burette containing mercury. The flask was heated in a water bath at a constant temperature of 100 degrees and the absorption of oxygen periodically measured.

The experiments were made on washed and dried samples of fine hard Para, pale rough crepe, brown crepe, soft Para, and smoked plantation sheet. A constant weight of rubber, 0.2500 g., was used in each case. This was allowed to dissolve in 25 c.c. of recrystallized benzene in the oxidation flash, kept in a dark place for five days. The total oxygen absorbed is shown in Table I, also the time in hours taken to absorb 90 per cent of the oxygen.

TABLE I

Rubber	% Resin	Total vol. of oxygen absorbed, c.c. at N.T.P.	Hours to absorb 90% of the oxygen
Fine hard Para	3.27	98.5	202
Pale rough crepe	3.02	135.6	188
Brown crepe	1.74	132.7	183
Soft Para	3.32	124.6	210
Smoked plantation sheet	3.50	135.5	210

N.T.P.—Normal temperature and pressure.

Effect of Mastication on Rate of Oxidation

The experiments were made on pale rough crepe, and the results are shown in Table II. *A* is the original unwashed rubber, *B* is the rubber masticated for a period of 15 minutes, and *C* masticated until "killed." A slight improvement in resistance to oxidation is noted in the case of the sample subjected to a normal period of mastication. This is probably due to the rubber cells becoming more compressed and, therefore, less liable to be attacked by the oxygen. The overmasticated sample oxidizes very rapidly, and absorbs less oxygen. It appears, therefore, that overmastication brings about a material change in the physical and chemical constitution of rubber.

TABLE II

Rubber	% Resin	Total vol. of oxygen absorbed, c.c. at N.T.P.	Hours to absorb 90% of the oxygen
A, pale rough crepe, original	...	134	190
B, masticated 15 min.	...	125	207
C, overmasticated	...	90	52

Gradual Purification on Rate of Oxidation

The rates of oxidation of four samples of smoked sheet rubber in various stages of impurity were determined as follows: the original rubber; rubber with the natural resins removed; rubber free from insoluble matter, and rubber rich in insoluble matter. The removal of the resins seems to increase the rate of oxidation. See Table III.

Under the heading, pale crepe, the following stages of impurity were investigated: *A*, original rubber; *B*, natural resins removed; *C*, protein matter removed; *D*, addition of 10 per cent of rubber resin (from pale crepe); *E*, resins removed and then replaced; *F*, film from ammonia-preserved latex; *G*, same as *F*, but extracted with water. As in the case of smoked sheet, the removal of either the resin or protein matter increases the rate of oxidation. See Table IV.

On replacing the resin removed, the rubber oxidizes less rapidly than rubber without resin, but more rapidly than the original rubber. This appears to show that the rapid oxidation on removal of resin is due to two factors: (a) mechanical, the effect of extracting with benzene; (b) chemical, removal of an anti-oxidant present along with the resin. This theory is supported by the fact that on adding 10 per cent of rubber resin to untreated rubber, a marked improvement against oxidation is observed (*D*).

A film made from rubber latex oxidizes less rapidly than ordinary pale crepe. On extracting such a film with water, however, it oxidizes more rapidly. The general conclusion to be drawn is that, commencing with latex, each stage of purification, viz., washing with water, removal of benzene-insoluble matter, and removal of resin, has a deleterious effect on the resistance of rubber to oxygen. At each stage of purification the action appears to be partly physical (alteration in the structure of the rubber aggregate) and partly chemical, the removal of an anti-oxidant. The anti-oxidant appears to be very soluble in acetone, but it has not been possible to separate it from the resin, with which it is extracted.

TABLE III

Smoked Plantation Sheets

Experiment	Total vol. of oxygen absorbed, c.c. at N.T.P.	Hours to absorb 90% of the oxygen
A, original	135.5	210
B, acetone-extracted	78	46
C, free from insoluble matter	70	114
D, rich in insoluble matter	173	244

TABLE IV

Pale Crepe

Experiment	Total vol. of oxygen absorbed, c.c. at N.T.P.	Hours to absorb 90% of the oxygen
A, original	135.5	188
B, acetone-extracted	71.5	10
C, insoluble matter removed	116.0	206
D, plus 10% rubber resin	133.8	322
E, resin removed and replaced	97.0	104
F, latex film	87.0	342
G, latex film (water-extracted)	126.4	234

Effect of Various Resins on Rate of Oxidation

In view of the action of rubber resin, it was decided to try the effect of additions of various resins. Where *A* is original rubber, *B* is + 10 per cent of gutta-percha pitch, *C* is + 10 per cent of jelutong, *D* is + 10 per cent of American rosin. It was found that each of these has a catalytic effect on the oxidation of rubber.

Dragon's blood resin, on the other hand, has a remarkable retarding effect on the oxidation by adding to respective portions of the original rubber 10 per cent each of gutta-percha pitch, jelutong and American rosin. Each of these additions was found to exert a catalytic effect on the oxidation except in the case of dragon's blood resin.

A test was made of the practical application of the retarding action of this resin. Various mixings, suitable for proofing, were made containing 1—5 per cent of dragon's blood resin, and spread on to cotton fabrics, and vulcanized, both by the cold cure process (sulphur chloride) and by hot vulcanization with sulphur. The samples thus made were exposed to the atmosphere under identical conditions, along with similar samples without dragon's blood resin.

In all cases the samples containing the resin showed no advantage over the others, the weathering action being the same in both cases. During weathering there are many other factors at work besides the chemical oxidation, the principal one being the action of actinic light, and it may be that these counterbalance the action of the dragon's blood resin. Support to this theory is given by

[1] *Jour. Soc. Chem. Indus.* June 17, 1927, pp. 220T-224T.

the fact that vulcanized samples with and without the resin were completely decomposed by exposure to ultra-violet light (in an Atlas fadeometer) for 70 hours.

During these weathering tests it was observed that the action takes place in two stages, the rubber first going to a soft tacky stage, and finally to a hard brittle powder. During the first stage the action is probably a physical one, depolymerization of the rubber taking place, and during the second stage the action is chiefly chemical, rapid oxidation taking place. It was also observed that the hot vulcanized samples withstood the weathering action much better than the cold vulcanized samples. Whereas the latter became soft and tacky after 40 days' exposure, and were completely decomposed after 135 days, the former only began to show signs of decomposition after 105 days had elapsed.

It may be, however, that during vulcanization the sulphur, in the case of hot vulcanization, or sulphur chloride, in the case of cold-cure, combines with the dragon's blood resin and renders it inactive as an anti-oxidant. Further experiments are being carried out on these lines.

Accelerated Aging Tests

In the experiments on weathering, it was observed that the hot vulcanized rubber gave much better results than the cold vulcanized rubber. An attempt was made to see whether this could be confirmed by measuring the relative rates of oxidation. It was found that the cold cured sample oxidizes less rapidly than the hot cured. In the case of the samples containing dragon's blood resin the rate of oxidation, against practical weathering tests, also shows that the measurement of the rate of absorption of oxygen bears no relationship to the rate of deterioration of rubber on exposure to the atmosphere.

Titanox—A New White Compounding Ingredient

Any titanium mineral may be used as a source of supply for titanium, the most interesting and valuable one is the mineral Ilmenite which is at present employed. Treated with sulphuric acid, Ilmenite is converted to titanic sulphate soluble in water. When titanium sulphate solution is diluted with water and heated, white colloidal titanium compounds are precipitated. This extremely fine white precipitate is handled through a rather complicated system of washing which is conducted with some difficulty due to the extreme fineness of the compound. It is finally calcined at a high temperature yielding titanium oxide.

The most satisfactory white pigment base has proven to be blanc fixe and this is the base of the composite pigment known as Titanox. Its composition is titanium oxide (TiO_2) 25 per cent and barium sulphate ($BaSO_4$) 75 per cent. Great care must be exercised to secure the particular properties required for blanc fixe in combination with titanium oxide, the raw material for which is supplied by domestic barium ores, treated according to the essentials of the regular method under careful supervision.

A physical mixture is secured through suspending blanc fixe in pulp form with titanium sulphate solution and then precipitating the titanium oxide as mentioned above. The combined precipitates are thoroughly washed and subsequently calcined to remove the water of hydration.

Titanox pigment so produced is not a mechanical mixture but rather an intimate physical one. It is probable that in the process of precipitation the colloidal titanium compounds are absorbed in the sponge-like structure of the amorphous barium sulphate with which they are later coalesced by calcination.

Although titanium pigments were primarily developed for use in paint, their value in the pigmentation of white and colored rubber products soon became apparent. This is especially true where the weight of the finished goods is to be kept as low as possible or in thin sheet stocks. Owing to the inert nature of titanox, it is believed that it has no reaction with the rubber or the sulphur used in the cure but rather serves as a filler pigment having a high opacifying or tinting value.

For thin rubber goods such as bathing caps, toy balloons, aprons, toys, hospital sheeting, etc., titanox has proved especially advantageous particularly rubber that is calendered to a thickness of five thousandths of an inch and a dense pigment is necessary to avoid overloading of the stock with filler. In stocks of this type titanox is extensively used for making white, flesh tints and other delicate tones. It is equally advantageous in such goods whether they are cured by the sulphur chloride method or by hot vulcanization.

Where light weight white stocks are desired, titanox may be advantageously used by virtue of its moderate specific gravity and high tinting strength. In such stocks it is possible to use a small quantity of it to develop the desirable degree of whiteness and for the balance, to employ a quantity of light weight filler to materially lessen the weight of the stock.

Recently another titanium composite pigment has been developed usually referred to as titanium calcium pigment. This is similar to titanox but consists of titanium oxide precipitated upon calcium sulphate. While characterized by whiteness and chemical inertness equal to that of titanox, titanium calcium pigment is lighter in specific gravity and greater in tinting strength. The specific gravity of titanox is 4.3; that of titanium calcium pigment is 3.19. Thus, it will be seen that three pounds of the latter approximates four pounds of the former in volume.

Experiments have indicated that of two compounds made exactly alike, one containing titanium calcium pigment and the other titanox in equal weights, the stock made with the calcium base pigment will be appreciably lighter in color. On the other hand, it will not quite equal the titanox stock in the qualities of elasticity, toughness, resilience or resistance to abrasion.

X-Ray Synthetic Rubber

Among the interesting topics discussed at the recent Institute of Chemistry of the American Chemical Society, at State College, Pennsylvania, was that treated by Prof. George L. Clark, assistant professor of applied chemical research, Massachusetts Institute of Technology, who spoke on the use of x-rays in research on the structure of non-metallic materials. He is quoted as saying regarding rubber, "X-Ray photographs show the amorphous pattern for unstretched rubber and the fiber-crystal structure of stretched rubber. That this is due to the rubber hydrocarbon is demonstrated in new work on very pure soluble rubber. The most interesting feature at present is that no sample of synthetic rubber has been found to produce this sharply defined fiber diagram. It is possible that this is the criterion of the successful artificial reproduction of rubber.

"Another recent development is the x-ray study of 'racked' rubber stretched 10,000 per cent. Whereas rubber stretched once begins to show a fiber pattern at 75 per cent elongation, racked rubber when released with a permanent set of 1,000 per cent, produces only the amorphous pattern."

Tests show that balata and gutta-percha both contain crystalline matter when unstretched, while rubber ordinarily does not.

RAYON AND ETHYLENE DICHLORIDE

In rubberizing rayon fabrics by spreading, a western chemist used ethylene dichloride as a solvent. As in the famous surgical operation, which was a brilliant success though the patient died, the fabric took a fine coating of rubber but it parted on the slightest pulling. Nitro-cellulose weaves immersed in the same solvent for twenty minutes were noticeably softened, yet in a similar test with carbon tetrachloride they were wholly unaffected. Hence the chemist concluded that, despite its undoubted advantages in other rubber processes, the use of ethylene dichloride was not advisable for rubberizing rayon, nor as a carrier for sulphur chloride in wet cold curing of rubber spread on rayon with benzol, naphtha, gasoline, or other solvent.

Chemical Patents

United States

1,631,265. ADHESIVE. A dispersion of bentonite, silicate of soda, water and rubber dissolved in a rubber solvent.—John J. Harris, Chicago, Illinois.

1,631,722. RUBBER SURFACING PROCESS. This comprises applying to the rubber a coating of lacquer containing shellac and capable of being hardened by halogenization and halogenizing the lacquered surface. —Herbert W. Emery, Holliston, assignor to Archer Rubber Co., Milford, both in Massachusetts.

1,631,871. ACCELERATOR. A method of producing mercapto-benzothiazole that comprises associating aniline with sulphur and carbon bisulphide at a temperature between 150 and 300 degrees C. and under a pressure between 100 and 700 pounds per square inch.—William J. Kelly, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio.

1,631,943. HEAT TREATMENT OF RUBBER. A continuous method of heat treating rubber articles by moving them progressively through a circulated medium of heating fluid, different zones of which are maintained at different temperatures.—William R. Urquhart, Los Angeles, California; Clifford W. Post, Chicago, Illinois; Dwight E. Humphrey, Cuyahoga Falls, Ohio, and Clarence C. Van Arsdale, Akron, Ohio, assignors to The Goodyear Tire & Rubber Co., Akron, Ohio.

1,631,947. METHOD OF TREATING RUBBER. Vulcanized rubber preservative of specified type composition.—Herman A. Bruson, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,632,617. RUBBER VULCANIZATION. This comprises combining with rubber a vulcanizing agent and an accelerator consisting of an aromatic substituted dithiocarbamate.—Stuart B. Molony, Conshohocken, Pennsylvania, and Yasujuro Nikaido, Bay City, Michigan, assignors by mesne assignments, to Charles W. Brown, William L. Clause, and Edward Pitcairn, Pittsburgh, Pennsylvania.

1,632,666. RUBBER VULCANIZATION. This comprises combining with rubber a vulcanizing agent and an accelerator containing a dithiocarbamic compound having the radicals R and R′ attached to the nitrogen and sulphur atoms respectively, the radical R containing an acid forming inorganic constituent and the radical R′ containing an organic constituent or metal.—Stuart B. Molony, Wellesley Hills, Massachusetts, and Yasujuro Nikaido, Bay City, Michigan, assignors by mesne assignments, to Charles W. Brown, William L. Clause, and Edward Fitcairn, Pittsburgh, Pennsylvania.

1,632,667. RUBBER VULCANIZATION. This process comprises combining with rubber a vulcanizing agent and a dithiocarbamic compound containing aromatic and alkayl constituents.—Stuart B. Molony, Wellesley Hills, Massachusetts, and Yasujuro Nikaido, Bay City, Michigan, assignors, by mesne assignments, to Charles W. Brown, William L. Clause, and Edward Pitcairn, Pittsburgh, Pennsylvania.

1,633,500. PUNCTURE SEALING COMPOSITION. A composition for sealing punctures in pneumatic tires and having the following approximate composition in parts by weight: talcum powder, 20; glycerine, 10; dextrine, 15; water, 45; coloring matter, 0.00025.—Enrico Serchi, Sienna, Italy, assignor to Isidore Braggiotti, Brookline, Massachusetts.

1,634,054. PETROLEUM-OIL COMPOSITION. This comprises an oil suitable for electrical purposes in which is incorporated a small amount of para-amido-phenol.—Albert A. Somerville, Flushing, New York, assignor of two-thirds to R. T. Vanderbilt Co., Inc., New York, N. Y.

1,634,124. METHOD OF THICKENING AND STABILIZING LATEX. The process comprises thickening the continuous phase and stabilizing the latex by the addition of the ammonium base soap of a higher aliphatic acid, without substantial modification of the colloidal condition of the rubber hydrocarbon.—Merwyn C. Teague, Jackson Heights, New York, assignor to American Rubber Co., East Cambridge, Massachusetts.

Reissue

16,648. VULCANIZATION PROCESS AND PRODUCT. The reaction product of aldehyde-ammonia with mustard oil used as an accelerator with a vulcanizing agent.—Norman A. Shepard, Akron, Ohio, and Stanley Krall, Longmeadow, Massachusetts, assignors to The Firestone Tire & Rubber Co., Akron, Ohio.

Dominion of Canada

271,472. MANUFACTURE OF PAPER AND PAPER BOARDS. The process for finishing paper and paper boards, which consists in applying to the surface a film of a liquid dope constituted of rubber suspended in a slurry of colloidal clay.—George F. Blombery, Lane Cove, near Sydney, New South Wales, Australia.

271,571. RUBBER-LIKE PRODUCTS. This process comprises subjecting polymeric vinyl compounds with sulphur.—The Consortium Fuer Electrochemische Industrie, assignee of Willy O. Herrmann and Wolfram Haehnel, all of Munich, Bavaria, Germany.

271,585. TYFE CLEANING COMPOUND. A composition of matter for cleaning type, consisting of powdered calcium carbonate, plastic rubber, rapeseed oil vulcanized with sulphurous chloride, lithopone, a mineral oil having a specific gravity of 38 Bé., a flash point of 260 degrees F., a fire-point of 510 degrees F., and a boiling point of 300 degrees F., and glycerine.—The Eberhard Faber Pencil Co., Brooklyn, assignee of Eberhard L. Faber, New York, both in New York.

271,759. RUBBER COMPOUND. In the process of compounding with rubber, the step which comprises mixing rubber stock and a coal tar distillation residue containing about 60 per cent of uncombined carbon and 40 per cent of high boiling point hydrocarbons.—The Barrett Co., New York, N. Y., assignee of Arthur B. Cowdery, Needham, Massachusetts.

271,797. RUBBER EMULSION. A process of dispersing rubber in substances which are non-solvents of rubber, such as oils, waxes, gums, resins, bitumens or mixtures thereof, which comprises first incorporating a colloid in a rubber mass and then mixing it with the non-solvent substance at a temperature below the depolymerizing temperature of rubber but sufficient to render the substances sufficiently liquid to permit effective mixing.—The Research Inc., Boston, assignee of W. B. Pratt, Wellsley, both in Massachusetts.

The United Kingdom

268,853. RUBBER COMPOSITIONS. A rubber composition suitable for vulcanizing purposes comprises rubber mixed with finely divided carbon deposited on a catalyst. The catalyst used comprises preferably equal parts of iron and nickel formed by the reduction of iron and nickel oxides by carbon monoxide at 500 degrees C., and the mixture may comprise 200 parts rubber, 72 parts carbon containing 5-10 per cent catalyst, 20 parts zinc oxide, 8 parts sulphur, and 2 parts diphenylguanidine.—F. C. Dyche-Teague, 258 Gloucester Terrace, London, England.

269,124. PRESERVING RUBBER INSULATION. Elastic rubber-containing bodies are made resistant to ozone by covering them with a plastic layer containing rubber or like gum, which is incapable of setting up internal stresses resisting deformation. A suitable plastic layer consists of 35 parts balata, 5 parts reclaimed rubber and 60 parts of vegetable or animal oil substitute. Gutta percha or chicle may replace some or all the balata, and the composition may be vulcanized to an extent short of becoming resilient. The invention is particularly applicable to electric insulation, for example, in high tension cables, and insulating mats.—Simplex Wire & Cable Co., assignees of C. R. Boggs and J. T. Blake, all of 201 Devonshire street, Boston, Massachusetts, U. S. A.

269,127. REGENERATING RUBBER. Vulcanized waste rubber is distilled to yield an oil consisting largely of isoprene and heveene. Other waste, such as cut up tire covers, is impregnated with this oil, and plunged into concentrated hydrochloric acid to polymerize the hydrocarbons and destroy the fabric insertions. The viscous mass after 15 to 20 days is washed and passed through a crepeing machine to remove the destroyed canvas, and leave a product capable of being used for any of the uses to which plantation rubber is put.—C. Danier, 3 Rue de Turbigo, Paris, France.

269,384. FATS. Plastic and pliable fats are obtained from naturally hard and brittle fats, such as cocoanut oil and palm kernel fat, by adding to the latter one half per cent or more of a vulcanizing rubber, rubber latex, chicle, kauri gum, etc.—K. Ersley, 60 Kwakkenbergsoheweg, Nijmegen, Holland.

269,504.† ELECTRODEPOSITION OF RUBBER. Porous molds used in electrophonetic deposition of rubber, etc., from latex are heated, preferably after each time of using, to reverse changes they have undergone during the deposition. Refractory molds may be heated to remove organic colloids which have penetrated the pores, or the molds may be placed in a colloid-free electrolyte, and a current passed through them in an opposite direction to that used during deposition, or the molds may be rinsed under pressure with an alkaline solution, or the electrolyte with which the mold is impregnated. When inert molds are used it is advisable to add a soluble calcium salt, or mixture of calcium and magnesium salts, to the electrolyte with which they are impregnated. In such case, carbonates formed, are decomposed by treatment in an acid bath.—Anode Rubber Co., Ltd., 15 Throgmorton avenue, London, England.

269,505.† ELECTRODEPOSITION OF RUBBER. In this process the liberation of gas at the cathode is prevented by means of an oxidizing depolarizing agent such as lead peroxide. A lead cathode may be coated with peroxide by using the storage battery process.—Anode Rubber Co., Ltd., 15 Throgmorton avenue, London, England.

269,556.† ACCELERATORS. Acetaldehyde-amine condensation products.—Rubber Service Laboratories Co., 335 South Main street, Akron, Ohio, assignees of C. N. Hand, Nitro, West Virginia, both in U. S. A.

269,693. VULCANITE. Vulcanite hard rubber is produced by heating a mixture of rubber, a high proportion of sulphur, and a substantial quantity of a powerful accelerator at a low temperature for a prolonged period. Example: 100 parts crepe rubber, 75 parts flowers of sulphur, 20 parts zinc oxide, 5 parts of zinc diethyl dithocarbamate, vulcanized at 100 degrees C. for 24 hours.—H. P. Stevens, 15 Borough High street, London, England.

269,745. PRESERVING RUBBER. Rubber goods are preserved from deterioration due to oxygen in the air or the effect of light, by the incorporation of small quantities of antioxidants, namely polyhydric phenolic compounds, together with substances adapted to absorb light rays, such as dyes or coumarin compounds.—B. D. Porritt, T. R. Dawson, and Research Association of British Rubber & Tyre Manufacturers, 105 Lansdowne Road, Croyden, Surrey, England.

269,975. BITUMINOUS CONCRETES. According to an example, a mixture of 100 parts of bitumen with 10-20 parts of vegetable oil is saponified with weak alkali lye, and 4-20 parts of the resulting emulsion are added to a mixture of 20-75 parts of broken stone and 1-7 parts of Portland cement. The concrete may be used as mortar between larger pieces of broken stone, or between paving blocks of stone, wood or rubber.—W. L. Van Westrum, 64 Victoria street, Westminster, England.

† Not yet accepted.

Germany

446,067 Vulcanizing rubber. Dovan Chemical Corporation, New York. Represented by B. Kugelmann, Berlin S. W. 11.

446,358 Condensing latex. K. D. P., Ltd., London. Represented by Dr. Carl Bohm von Börnegg, Bockenheimer-Anlage 45, Frankfurt-a-Main.

CHEMISTRY AND TRANSPORTATION

A symposium on chemistry's contribution to automotive transportation will be held at the Seventy-Fourth Meeting of the American Chemical Society which takes place at Detroit, Michigan, during the week of September 6.

The tentative list of subjects is a long one and includes rubber and coated fabrics. Discussion of the former topic will be in charge of Dr. W. C. Geer, formerly vice-president of The B. F. Goodrich Co., and of the latter topic in charge of Hamilton Bradshaw, assistant chemical director of E. I. du Pont de Nemours & Co., Inc.

New Machines and Appliances

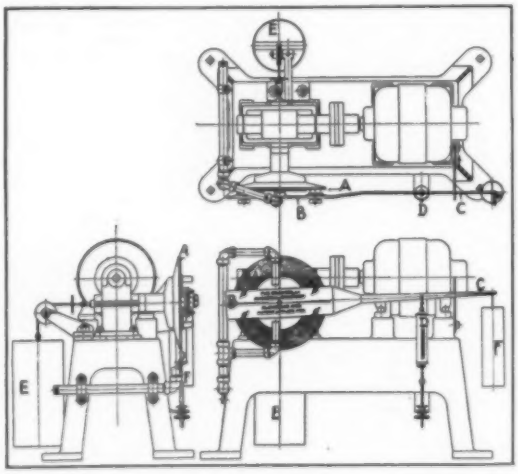
Rubber Abrasion Machine

A NEW form of abrasion machine has recently become available for general use. It was first described by its designer, Ira Williams, in a paper read before the Rubber Division of the American Chemical Society at the meeting held April, 1927, in Richmond, Virginia.

The principle of the machine is that of the Prony brake, and is designed for measuring the volume loss of rubber per unit of work expended. The machine is mounted on a heavy cast iron support and comprises a motor driven abrasive disk *A* mounted on a hollow shaft, rotating at 37 r.p.m. A bar *B* is permanently attached to a rod which extends through the hollow shaft. The test samples are attached upon the underside of this bar. A weight *E*, connected to the end of the rod mentioned by means of a cable over a pulley, holds the test pieces against the abrasive at constant pressure. The lever arm *C* carries at its end an adjustable weight *F* which is just enough to prevent rotation of the bar *B*.

Spring balance *D* serves for final adjustment of the load. The abrasive used for rubber is generally number O emery paper. The disk is kept clean during a test by jets of air blown against it through pipe connections with a source of compressed air.

This machine measures the volume loss in the usual manner which is computed with the measurement of "rate of work" and allows the calculation of "volume loss per unit of work expended."



Grasselli Abrader

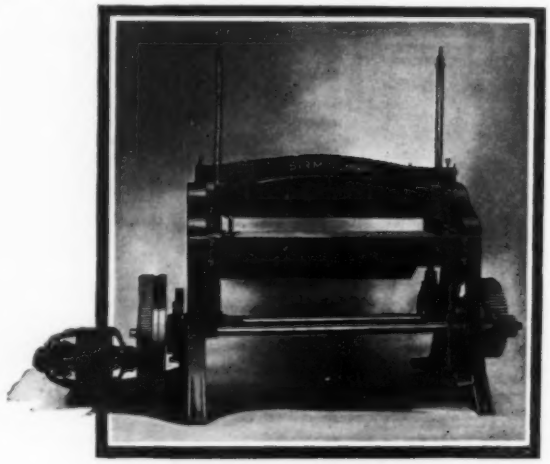
It is possible with this machine to vary the load during the test to do work at any predetermined rate upon the rubber instead of subjecting the abrasion blocks to a uniform load and measuring the rate of work.—The Grasselli Chemical Co., 347 Madison avenue, New York, N. Y.

Rubber Shear

Unwieldy slabs of reclaim, batched mixed stock, etc., are always more easily handled when cut into strips. This work, however, is slow and expensive if done by hand but decidedly rapid and inexpensive if done on the machine represented in the picture.

This is motor driven, heavy built to cut sheets 48 inches in width and up to 3 inches thick. It operates up to 40 strokes per minute which is as fast as the stock can be handled. The machine cuts a clean straight edge. Installed in the manufacturing department it is useful for cutting strips for heel blanking machines, shearing stock for molded articles, cutting for batch weights, etc.

The machine may be arranged for direct connected motor as pictured or for belt drive. If motor driven the motor should



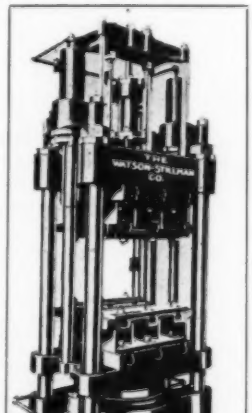
Birmingham Rubber Shear

be 3 h.p., 1,800 r.p.m. The main castings of the shear are made of strong semi-steel, the gears are all cut spur and the shafts are of machine steel mounted in phosphor bronze bearings.—Birmingham Iron Foundry, Derby, Connecticut.

Press for Plastic Molding

Molded articles made from plastic stocks compounded of synthetic resins such as bakelite, etc., require special plunger molds attachable to the platens of hydraulic presses quite different in their construction from those used for making molded vulcanized articles.

A semi-automatic molding press of recent design for plastic molding is pictured in the illustration. This press is fitted with independent hydraulic ejectors, and the operating and mechanical advantages are noteworthy.

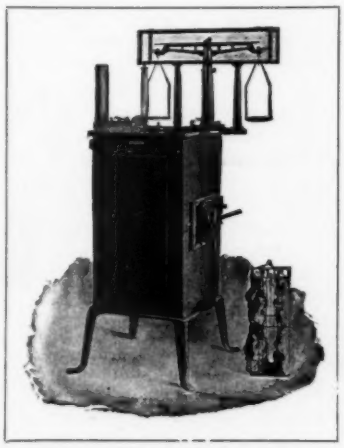


Semi-Automatic Molding Press

The hydraulically actuated top and bottom ejectors are operated independently to eject molded pieces at any position of the main ram. The hydraulic reseating of the ejector pins and hydraulic operation of the ejectors is positive and dependable. The ejector stroke for both top and bottom dies allows molding deep articles with economy of press opening. The elimination of top ejector tension rods passing through the top head and bottom platen increases the space available for dies. Provision is made by slotting both platens to allow the attachment of varying widths of mold. In combination these features tend to increase production and reduce initial mold cost. —The Watson-Stillman Co., 75 West street, New York, N. Y.

Textile Conditioning Oven

Knowledge of whether or not the percentage of moisture in a given textile is above or below the accepted standard is necessary if its buying, selling and testing are to be on a proper basis.



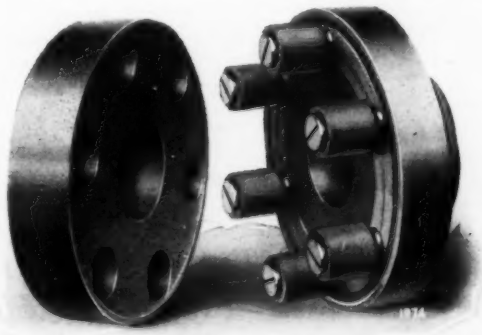
Emerson Single Basket Oven

The combination single basket conditioning oven and scales here illustrated afford a means for efficient textile operations based on true fiber weight plus an allowable regain. This oven offers the quickest and most accurate means of determining the percentage of moisture in a textile. The apparatus is electrically heated, equipped with automatic temperature control and is fitted with highly accurate analytical weighing balances.

In cases where an intensive method of drying is necessary a special oven is provided using forced circulation of heated air led first through final drying chamber and then through a pre-drying chamber.—The Emerson Apparatus Co., Melrose Highlands, Massachusetts.

Rubber Type Flexible Couplings

The flexible coupling pictured is commonly known as the rubber bushing type. While it was rated by its makers as the most satisfactory coupling for general use it was not until recently offered for general sale. It is manufactured solely for use with De Laval



De Laval Flexible Coupling

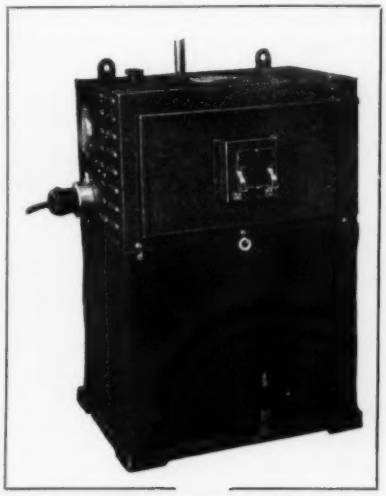
machinery such as turbines, centrifugal pumps, blowers and speed reducing gears. It is constructed to be truly flexible by containing a medium which will compress and expand without friction and without wear. Rubber does this most successfully. It not only takes care of misalinement but also serves to deaden shocks that may be generated by the driving or the driven machines. They may also serve as insulators which is sometimes desirable in electrical work.

The general construction is shown in the illustration which represents the coupling flanges separated showing bushings of special rubber vulcanized on heavy steel spools or sleeves which hold the rubber in shape and protect it from wear by the driving bolt.

The coupling is properly balanced for high speed work, the bolts are on a true circle and perpendicular to the faces of the coupling flanges. In short, all parts are manufactured to jigs and limit gages and pass through a system of inspection which insures interchangeability.—De Laval Steam Turbine Co., Trenton, New Jersey.

Ultra-Violet Quartz Lamp

The aging value of vulcanized rubber is a matter of increasing practical importance. In fact the research and testing departments of the leading rubber manufacturers include, as a matter of course, some form of apparatus for aging study. The apparatus pictured is designed for investigating the aging effect of ultra-violet radiation upon rubber. This is but one of many recent applications of scientific investigation of materials by ultra-violet light produced by a quartz mercury arc.



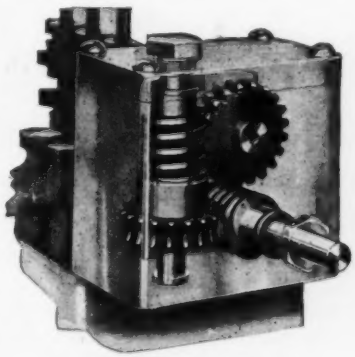
Universal Laboratory Model

The laboratory model is arranged for the production of intense ultra-violet light in general laboratory work. The quartz mercury arc burner is efficient and economical. It is contained within a sturdy, light proof case and is mounted on a substantial upright support adjustable to any height up to 20 inches above the base.

The new quartz mercury arc lamp used is especially adapted to the aging of rubber, bleaching tests, chlorination, oxidation and many other scientific and practical studies.—Hanovia Chemical & Manufacturing Co., Chestnut street and N. J. R. R. avenue, Newark, N. J.

Fractional Horsepower Speed Reducer

The illustration represents a line of fractional horsepower speed reducers embodying small size and sturdiness with wide speed reductions. They will stand up under any service that is within their range, giving single reductions of 20 to 1 and 30 to 1, and with a double combination of worms and gears, reductions of 50 to 1, 100 to 1, 200 to 1, and 400 to 1. Contained in grease tight boxes 4 by 2¼ by 4 inches in dimension. Hardened steel worms and bronze gears are used, running continuously in transmission oil or grease. This construction is protected against leakage by stuffing boxes.



Hill-McCanna Reducer

These reducers are adaptable up to 1 h.p. and fill a growing need for drives of small horsepower and are so compact that their application will not necessarily add bulk to the device on which they may be used.—Hill-McCanna Co., 2025 Elston avenue, Chicago, Illinois.

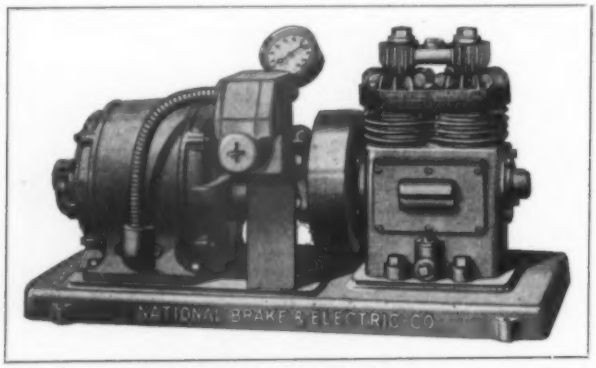
Portable Belt Conveyer

In rubber plants making footwear, heels, druggists' sundries, etc., where a steady flow of small parts is inspected or assembled, a light duty conveyer of the type pictured is most convenient and distinctly promotes efficiency on the part of the workers. This machine was designed for the bottling industry which requires a high class conveyer, smooth running and free from vibrations. It is therefore fitted with a high class self-lubricating reduction drive. This not only eliminates vibration but reduces the consumption of power. The belt travels over equally spaced steel rollers to minimize friction and the table is equipped with adjustable take ups for adjusting the belt tension. Whatever the working requirements may be, this work bench flanking the conveyer can be built to meet them.—United States Bottlers Machinery Co., 4015 North Rockwell street, Chicago, Illinois.

Liteduty Belt Conveyer

Sleeve Type Air Compressor

A dependable supply of compressed air economically produced is as essential as the supply of water, steam and electric current in the operation of a plant in many branches of the rubber industry. The latest development in air compressors supplies the growing demand for a more efficient, economical and quiet running air compressing unit. These compressors cover a wide range of sizes and capacities for all requirements, both air cooled and water cooled. They are known as sleeve valve compressors because of the type of valve employed. One of the many patterns is here illustrated. It is described as a two-cylinder, air-cooled automatic motor compressor equipment with 18 by 48 inch air tank and hose.

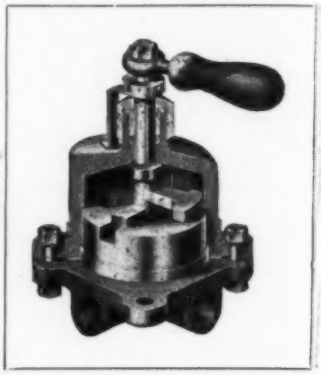


National Motor Compressor

The compressors are of the single stage type, built in one and two cylinder models and in sizes from 2.42 to 10.90 cubic feet displacement. The motors have high starting torque and are of a standard type best suited for this particular class of service. The operation of the compressing equipment is automatically controlled by a combined electric-pneumatic device of the diaphragm type which automatically starts and stops the motor when the air in the air tank reaches the minimum and maximum pressure.—National Brake & Electric Co., Milwaukee, Wisconsin.

Multiple Way Valves

Three and four-way valves of the pattern here illustrated are exceptionally well adapted to handle air, steam or water pressures up to 500 pounds in rubber manufacturing equipment, as for example, on Banbury mixers, rimming presses, air hoists, watch case heaters, expanding presses, etc. The sectional view shows the internal construction of a four-way valve with inlet and outlets marked. This valve operates with remarkable ease and smoothness compared with the ordinary plug type valve.



Nicholson Four-Way Valve

The body or upper half of standard stock valves is made of cast iron. So also is the base which is integral with the seat. The valve disk and stem are made of bronze. A valve of this construction is suitable for all ordinary conditions where the water is favorable. Where acid conditions prevail, special valves in monel metal, cast steel, bronze, etc., are used.—W. H. Nicholson & Co., Wilkes-Barre, Pennsylvania.

Process Patents

United States

1,631,317 Baseball center. William H. Fox, Minneapolis, Minnesota.

1,632,490 Cushion tire. William C. Martin, Milwaukee, Wisconsin.

1,633,342 Pulley band tire construction. Thomas Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,634,145 Making laminated belts. Edgar F. Hathaway, Wellesley, Massachusetts.

1,634,160 Manufacturing inner tubes. Charles H. Semple, Youngstown, assignor by direct and mesne assignments, to Semple Lee Processes, Inc., Akron, both in Ohio.

1,634,161 Inner tube. Charles H. Semple, Canton, assignor to Semple Lee Processes, Inc., Akron, both in Ohio.

Dominion of Canada

271,787 Tire. The Lambert Tire & Rubber Co., Barberton, assignee of Frederick A. Krusemark, Akron, both of Ohio, U. S. A.

271,970 Plastic article. The B. F. Goodrich Co., New York, N. Y., assignee of Tod J. Mell, Akron, Ohio, both in U. S. A.

272,016 Submarine cable core. The Western Electric Co., Inc., New York, N. Y., assignee of Charles Martell, Cicero, Illinois, both in U. S. A.

United Kingdom

268,837† Securing boot protectors. A. Hoffmann, 164, Gabitzstrasse, Breslau, Germany.

269,224 Attaching layers of rubber. F. J. Davis, 5, Thornton avenue, Clapham Park, London.

269,342 Connecting uppers to insoles and soles. A. Burton and A. C. York, 60, Colton street, Leicester.

269,415 Printing on toy balloons. E. C. R. Marks, 57, Lincoln's Inn Fields, London (United States Import House E. van Dam, 1 Huddestraat, Amsterdam, Holland).

† Not yet accepted.

New Zealand

56,658 Affixing pneumatic tires on rims. Michelin & Co., Clermont-Ferrand, Puy-de-Dome, France.

Germany

445,828 Molding artificial hands and feet of sponge rubber and solid rubber. Hume-Armbruster Gesellschaft für Prothesenbau m.b.H., Brückenstrasse 66, Frankfurt-a-Main.

445,988 Automatic tube-closing for tires of bicycles, motorcycles and automobiles. Fritz Sarnighausen, Lokstedt Bez. Hamburg.

Designs

Germany

992,362 Clamping device for vulcanizing presses for belts. G. Seimpelkamp, & Co., Ritterstrasse 204-222, Krefeld.

Machinery Patents

The United States

1,631,281. MACHINE FOR REMOVING AIR BAGS FROM TIRES. This device provides for the removal of air bags from tires without damage to the bags. It is accomplished by placing the tire with one of the beads gripped by a fixed hook as the tire lays against an inclined frame. By a system of levers the frame is then tilted in the opposite direction which allows a pulling hook to be inserted over the air bag. The pull is exerted by a compressed air mechanism that removes the tire without buckling it.—Howard P. Moore, Cuyahoga Falls, assignor to The Mohawk Rubber Co., Akron, both in Ohio.

1,631,707. VULCANIZING APPARATUS. This cures rubber articles under water held at an elevated temperature above the normal boiling point. The apparatus is adapted for maintaining the water under super-atmospheric pressure while the articles to be vulcanized are submerged and removed from the water. The water remains in the same container both during and between the vulcanizing periods of successive batches of the articles.—James D. Tew, Hudson, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,632,652. TIRE TREAD APPLYING MACHINE. This is a duplicate mechanism, one at either end of a table and power actuated. The rim of each of the applying wheels is grooved to receive a tire body. By pulling down on a hand lever the tire can be brought into contact with a tread stretched out on a conveying belt on the table. Attachment of the tread is effected as the belt is advanced carrying it under the tire body.—Howard O. Hutchens and Arnold R. Krause, assignors to Gillette Rubber Co., all of Eau Claire, Wisconsin.

1,632,760. APPARATUS FOR COATING AND DRYING FABRIC. This is a self-contained apparatus into which fabrics from a roll enter at one end of the base after passing through an impregnating solution. The wet fabric is threaded up and down over rollers within the drying chamber from which it emerges dry at a point opposite its entrance.—Robert R. Jones, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,633,249. ATTACHMENT FOR CALENDERS. This mechanism receives sheets of cut strip rubber from a calender, receiving, conveying and turning the strips over rollers so placed as to superimpose them as laminations of graduated widths. In this way camel back tire treads can be run from a plain sheet calender.—Nathan B. Goodwin, Trenton, New Jersey.

1,633,263. COLLAPSIBLE CORE AND CHUCK. This chuck is so constructed that one of its segments may be drawn inwardly in a radial direction and entirely removed. Of the remaining segments one or more may be swung inwardly and permit a very compact collapsing of the structure to facilitate the removal of the tire built upon the core.—L. A. Moreland, assignor to The De Laski & Thropp Circular Woven Tire Co., both of Trenton, New Jersey.

1,633,326. STITCHING TOOL. This device consists of a pair of bevel tire stitchers of usual form, but driven independently by small electric motors. The speeds of the stitchers can be varied so that in laying a ply of fabric in which the cords are at right angles to the cords of the preceding ply the stretch of the cords can be equalized. Several cords having the cords at about the same angle may be stitched down and stretched in a single operation.—Daniel E. Hennessy, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,633,587. TIRE VULCANIZER. This is a vulcanizer of watch-case form in which improved facilities are present for rapidly and uniformly heating the tire mold. The mold cavities and the heating chambers are separate and distinct parts made to fit together in fluid-tight condition, yet are detachably connected in such manner as to permit the ready removal of the mold sections when desired.—Karl B. Kilborn and William S. Wolfe, assignors to Seiberling Rubber Co., all of Akron, Ohio.

1,633,591. VULCANIZING APPARATUS. This apparatus is adapted for vulcanizing continuously moving lengths of material such as rubber covered cables. This continuity of process obviates the necessity of handling the material between successive steps in the manufacture and eliminates the possibility of irregularities in or injury to the material in process. The curing is effected by passing the cable in a spiral groove around a heated drum while encased in flexible metallic endless belts which serve as a mold.—Leslie F. Lamplough, Chicago, Illinois, assignor to Western Electric Co., Inc., New York, N. Y.

1,633,620. APPARATUS FOR MANUFACTURING TIRE BEADS. This invention substitutes for the usual braided bead, wire tape, by using unconnected wires directly from reels or coils. These are passed through the die of a tuber and given a bunched or tape-like arrangement as they are coated with a rubber composition. From the machine the rubber coated wire may be led directly to the bead building ring, where it is formed and given a preliminary core ready for the tire building operation.—Sterling W. Alderfer, Akron, Ohio.

1,631,806 Vulcanizing apparatus. Roy D. Fritz, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,631,855 Tire building core. Barthold de Mattia, Clifton, assignor to De Mattia Brothers, Inc., Garfield, both in New Jersey.

1,631,941 Tire regrooving tool. Joseph A. Straits, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,632,151 Strip applying attachment for tire building machines. Charles W. Steele, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,632,310 Tire mold. John Clifford Paynter, assignor to Paynter Corporation, both of Philadelphia, Pennsylvania.

1,632,394 Apparatus for producing pneumatic tubes. Walter L. Fairchild, New York, N. Y.

1,632,618 Air pressure regulator. Earl M. Morley, Delta, assignor by direct and mesne assignments to The Air-Scale Co., Toledo, both in Ohio.

1,632,619 Tire inflation mechanism. Earl M. Morley, Delta, assignor to The Air-Scale Co., Toledo, both in Ohio.

1,632,816 Method and machine for covering flexible strips. Robert R. Ambler, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,632,830 Molding and vulcanizing apparatus. John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,633,330 Repair plug inserting tool. Hugh T. Hughes, Cleveland, Ohio, assignor by mesne assignments to Edward Hainke, Grand Rapids, Minnesota.

1,633,492 Pneumatic tire charging equipment. Earl M. Morley, Delta, assignor to The Air-Scale Co., Toledo, both in Ohio.

1,633,548 Seal for driers, heaters or the like. Robert R. Jones, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,633,590 Method of and apparatus for vulcanizing rubber. Leslie F. Lamplough, Chicago, Ill., assignor to Western Electric Co., Inc., New York.

1,633,592 Method of and apparatus for vulcanizing material. Carl D. Hart, La Grange, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,634,047 Mold. George I. Smith, Los Angeles, California.

1,634,106 Vulcanizing mold. Ernest Hopkinson, New York, N. Y.

Dominion of Canada

271,586 Rubber treating machine. The Farrel Foundry & Machine Co., assignee of Richard C. Lewis, both of Ansonia, Connecticut, U. S. A.

271,598 Tire mold. The Lambert Tire & Rubber Co., Barberton, assignee of Wallace R. Gillam, Tallmadge, and Mark A. Replogle, Akron, all in Ohio, U. S. A.

271,613 Vulcanizing apparatus. The O. & W. Co., New York, N. Y., assignee of Edward Nelson, Belleville, New Jersey, both in U. S. A.

271,788 Tire mold. The Lambert Tire & Rubber Co., Barberton, assignee of Frederick A. Krusemark, Akron, both in Ohio, U. S. A.

271,791 Bias cutter. The Miller Rubber Co., assignee of James W. Brundage, both of Akron, Ohio, U. S. A.

United Kingdom

268,982 Tire cover apparatus. Dunlop Rubber Co., Ltd., 32, Osnaburgh street, London, and H. F. Ryan, Dunlop Rubber Co., Fort Dunlop, Erdington, Birmingham.

269,132† Apparatus for making weftless cord cloth. F. D. Smith, 1942 2nd avenue, East Vancouver, British Columbia.

269,157† Spray evaporator for drying latex. General Rubber Co., assignee of E. Hopkinson, both of New York, N. Y., U. S. A.

269,223 Hollow metallic glove model. E. White, 56, Audley Road, Levenshulme, Manchester, and J. McCarthy, 5, Latham Road, Irlam, near Manchester.

269,294 Repair vulcanizer. A. Matthews, 36, Mighell street, Brighton, Sussex.

269,505† Apparatus for treating rubber, latex, etc. Anode Rubber Co., Ltd., 15, Throgmorton avenue, London.

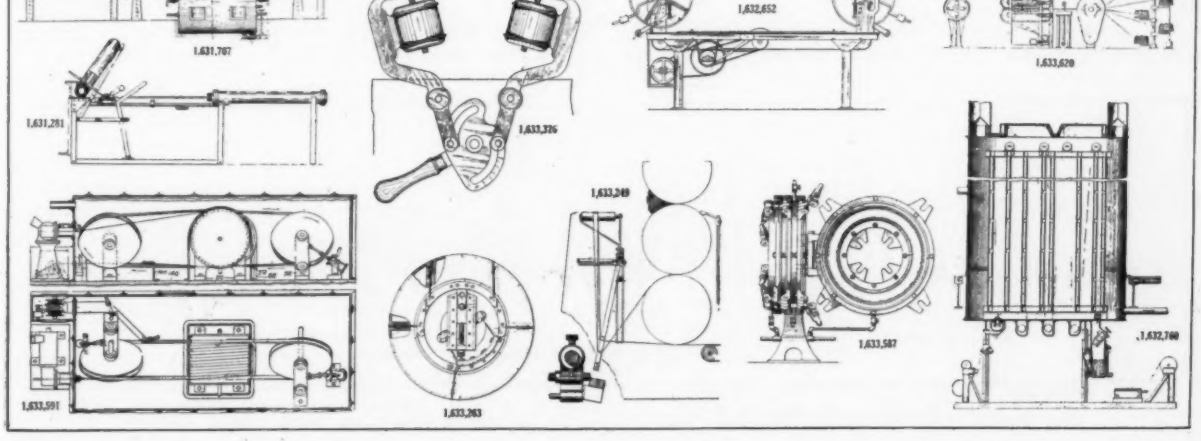
269,557† Apparatus for testing tires for defects and locating punctures. H. C. Heynemann, San Francisco, California, U. S. A.

269,721 Apparatus for cleaning molds. A. Stephenson and Allen-Liversidge, Ltd., Victoria Station House, Westminster.

270,149 Stock racks. J. H Beaumont, 29, Southampton Buildings, London, England, and F. Spinel, Morrisville, Pennsylvania, U. S. A.

270,162 Tire expander. W. E. Swern, 901 Park avenue, Kokomo, Indiana, U. S. A.

† Not yet accepted.



Radio Rubber Weightmeter

A Practical and Sensitive Instrument for the Accurate Control of Calendered Sheet Stocks

THE production of calendered stock to specified gage and weight is particularly important in large-scale production of tires and goods made from calendered sheets because these consume prodigious tonnages of material at large poundage cost. Hitherto the installation of gravity weightmeters and the use of hand gages have served only for approximate control and leave apparent the need of a better way to regulate the gage of calendered sheets. In this, as in other departments of rubber working equipment, a welcome development has taken place and is here illustrated and described.

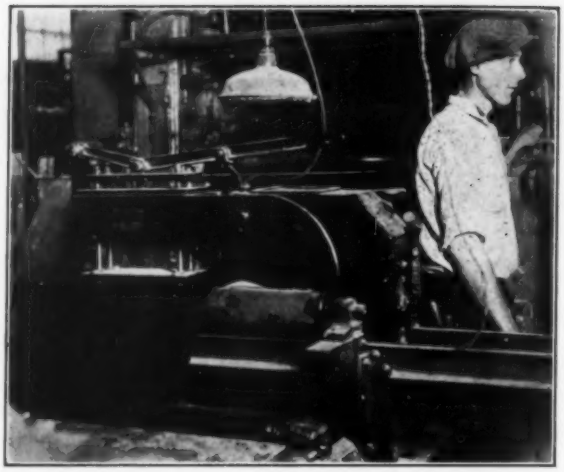
The value of a weightmeter in a rubber plant, or any other where the attempt is made to produce calendered stock of definite caliper, is proportioned to its sensitivity in responding to the minor changes of gage that inevitably occur in the run of work. At best the calender operator, with the usual gages or calipers at command, can gage the sheet only at intervals by clipping samples from either edge of the sheet and adjusting the calender accordingly. This method is a mere approximation both difficult and unsatisfactory, particularly where variations in gage, however slight, represent continuous large poundage losses of stock.

In coating tire fabrics, for example, changes in consistency of the rubber composition due to higher or lower temperature of the stock feed as delivered by the warmer, will cause the gum to penetrate the meshes of the fabric by a variable amount and thus change the gage without changing the weight. Also on inner tube and pure gum stocks the caliper or gage will sink further into one sample than into another and give misleading results.

In practice these variations may reduce the accuracy of stock uniformity to a tolerance of 4 to 5 per cent. Data from experimental installations in several rubber plants demonstrated lack of sensitivity on the part of the weightmeter which recorded constant weight with caliper variations of as much as .002 to .005 in .050 of an inch.

The problem of providing a weightmeter at once sensitive to every variation in gage of the stock proceeding from a calender and dependably accurate has been apparently solved by the application of a radio condenser that responds electrically to every change in gage of any non-conducting sheet material which passes through the weightmeter.

An example of the application of one such electrical or radio weightmeter to a rubber calender shows it to be a sturdy mechanism located in front of the calender with a sheet of rubber passing over a small roll while the gaging plate rests upon it.



Weightmeter in Factory of Miller Rubber Co., Akron, Ohio

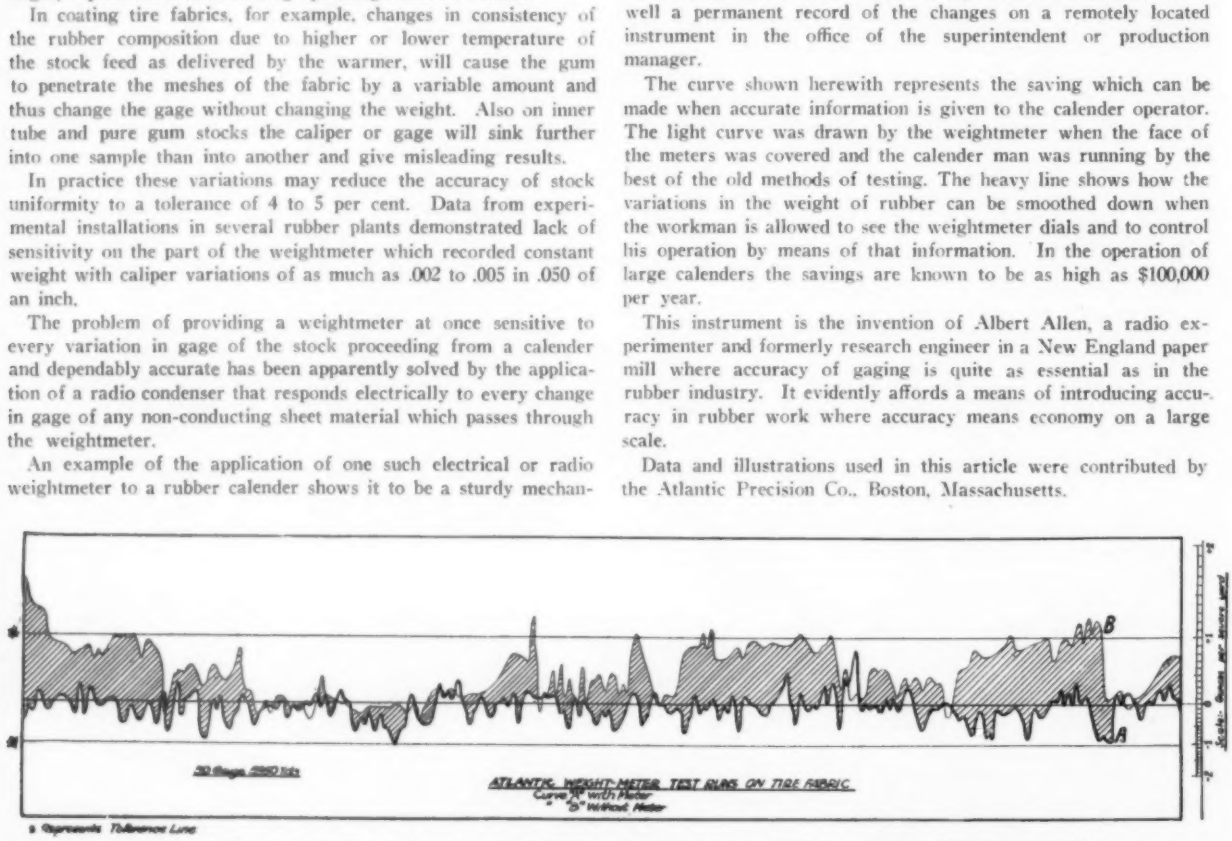
The fundamental principle upon which the device depends for its operation is that if the moving web of paper, rubber, linoleum, or any other sheet material be passed between the plates of an electro-static condenser, any change in weight of the material between the plates, at any time, will result in a change of capacitance of the condenser.

By means of a sturdy, trouble free and compactly constructed thermonic tube oscillator these variations of condenser capacity are instantly indicated on the scale of an easily read meter conveniently located near the calender operator, making possible as well a permanent record of the changes on a remotely located instrument in the office of the superintendent or production manager.

The curve shown herewith represents the saving which can be made when accurate information is given to the calender operator. The light curve was drawn by the weightmeter when the face of the meters was covered and the calender man was running by the best of the old methods of testing. The heavy line shows how the variations in the weight of rubber can be smoothed down when the workman is allowed to see the weightmeter dials and to control his operation by means of that information. In the operation of large calenders the savings are known to be as high as $100,000 per year.

This instrument is the invention of Albert Allen, a radio experimenter and formerly research engineer in a New England paper mill where accuracy of gaging is quite as essential as in the rubber industry. It evidently affords a means of introducing accuracy in rubber work where accuracy means economy on a large scale.

Data and illustrations used in this article were contributed by the Atlantic Precision Co., Boston, Massachusetts.



The Shaded Area Above the Zero Line Represents the Saving of Stock by Weightmeter Control

Editor's Book Table

"Fourth Annual Report, 1926." Propaganda Department of The International Association for Rubber and other Cultivations in the Netherlands Indies. Paper, 21 pages, 6 by 9 inches. Illustrations.

The latest annual report covers some interesting subjects and gives a good view of the many-sided activities of the Propaganda Department, which, however, seem to be somewhat hampered by uncertainty in financial conditions, as indicated by certain remarks in the opening paragraphs.

Under general remarks, consumption of raw rubber and the increase in the American consumption of reclaimed rubber are touched upon. Interest in crepe rubber for soles, we learn, continues to grow; the first experiment in paving with rubber blocks supplied by Rubber Roadways, Ltd., of London, was begun at Scheveningen last July; experiments with latex were continued. The working program for 1927 shows that activities are to continue in connection with roadways, flooring, latex, rubber in the shoe trade and for some other purposes.

Among the members of the committee in 1926 we find such well-known men as Professor Dr. G. van Iterson, Jr., Dr. A. van Rossem, J. S. C. Kasteleyn, W. C. Loudon, etc.

"New Experiments on the Effects of X-Rays in Photo-Chemical Oxidation, Catalyst Activation and the Ionization of Gaseous Mixtures Containing Detonation Inducers and Suppressors." By George L. Clark. Contribution from The Department of Chemical Engineering, Massachusetts Institute of Technology, Serial No. 196. 12 pages.

This paper is reprinted from The British Journal of Radiology (Roentgen Society Section, Vol. XXIII, April, 1927. Of special interest to rubber chemists are two pages in which the author with Brian Mead and J. D. Cochrane report on their extended researches upon the aging of rubber and oils.

"Kolloidchemische Technologie." Edited by Dr. Raphael Ed. Liesegang. Published by Theodor Steinkopff, Dresden and Leipzig. In 13 installments, paper covers, 7¼ by 10 inches. Illustrations, tables, graphs, indexes, bibliographies.

Feeling the need for a comprehensive treatment of the subject, Dr. Raphael Ed. Liesegang secured the collaboration of a number of authorities in the various departments of colloid chemistry. In his foreword, Dr. Liesegang remarks that while some might think that a series of treatises of different authors would be lacking in homogeneity, yet such a collective work has the advantage of avoiding one-sidedness.

The present work, which was received in 13 installments, is divided into two parts; the first is theoretical and covers colloid solutions, colloid mills, ultra filtration, electro-osmosis, viscosimetry of colloid solutions, dispersoid and capillary analyses, etc. The second and far longer special part includes besides a final chapter by Dr. Liesegang, treatment of 27 different subjects, the first on the list being rubber. This section, covering about 30 pages, has been fittingly entrusted to Dr. E. A. Hauser, who discusses the production of crude rubber, its constitution, preparation of latex for commercial purposes, application of latex in manufacture, mastication, theory of mastication, vulcanization, etc. Mention must be made of the bibliographies that have been appended to each section, which greatly add to the value of the work, and also of the index of authors and of subjects.

With the number of subjects handled, exhaustive treatment could hardly be expected, and Dr. Liesegang fully realizes that amplification is necessary in many instances and promises that if and when a new edition is required, many deficiencies will be made up. This by no means detracts from the value of the work, indeed Dr. Liesegang is to be congratulated on the success of the first attempt to bring together in one comprehensive work the results attained in the various field of application of colloid chemistry.

New Trade Publications

The Flexo Supply Co., St. Louis, Missouri, has just issued a new bulletin which illustrates and describes the use of Flexo swing joints on hydraulic vulcanizing and molding presses.

"The Black Art of Rubber Compounding." Chat No. 14. The latest issue in this series of booklets on practical compounding issued by Binney & Smith Co., 41 East Forty-second street, New York, N. Y. is devoted to recording a number of recent developments involving new uses for Micronex. These developments have taken place in the many types of stocks used in the tire, insulated wire, mechanical rubber goods, heels and footwear divisions with notable improvement in their working qualities and tensile properties.

"Dupont Semesan." This very interesting pamphlet of 32 pages issued by E. I. du Pont de Nemours Co., Inc., Wilmington, Delaware, contains a succession of advertising pages urging the use of Semesan as a means of crop protection by controlling plant and soil diseases. Three pages of explanatory matter and statistical tables emphasize the effectiveness and need of this remedy. The importance of the subject matter is such as to merit the attention of all agriculturists, rubber growers no less than ordinary farmers and gardeners.

"Cotton Production in the United States, Crop of 1926." This booklet issued by the Department of Commerce gives all the details regarding the past crop, ginnings by counties, average weights of bales for each section, as well as comparisons with the previous two years. It may be had from the Superintendent of Public Documents, Government Printing Office, Washington, D. C., for 10 cents.

Abstracts of Recent Articles

EBONITE MANUFACTURE PART IV. Ebonite rod from pure vulcanized waste.—R. M. Ungar, *I. R. Jour.*, June 4, 1927, pp. 921-23. Serial.

BARYTES AND ITS EMPLOYMENT IN THE RUBBER INDUSTRY. Concluded.—T. R. Dawson and N. H. Hartshorne, *I. R. Jour.*, June 11, 1927, pp. 961-66. Charts.

THE CHARACTERISTICS AND PROPERTIES OF THE MAIN TYPES OF ASBESTOS FIBERS.—J. N. Langley, *I. R. Jour.*, June 25, 1927, pp. 1042-43. Analyses.

COMPOUNDING TROUBLES IN RUBBER MANUFACTURE. A discussion of zinc oxide, magnesium oxide, magnesium carbonate, antimony, sulphides, arsenic sulphide, vulcanized oils, green and blue pigments, lead oxides and accelerators, using scrap and mixing.—E. Bruce Warren, *Rubber Age*, London, June, 1927, pp. 150-2 and July, 1927, pp. 216-17.

RECENT DEVELOPMENTS IN RUBBER MACHINERY. The Bridge-Banbury mixer. Anonymous. *Rubber Age*, London, June, 1927, pp. 153-56. Illustrated.

PLASTIC HYDRO-COLLOID COMPOSITIONS OF RUBBER.—Anonymous. *I. R. Jour.*, July 9, 1927, p. 70.

INFLATABLE RUBBER BALLS. A new process of manufacture.—Anonymous. *I. R. Jour.*, July 9, 1927, pp. 72-3.

OILS AND PAINTS RESISTANT TO SULPHUR.—Rudolph Ditmar. *Gum.-Zeit.*, 41, p. 1348 (1927) German.

RUBBER RESEARCH IN 1926.—Marianne Pieck. *Gum.-Zeit.*, 41, pp. 1633-4, 1686-8, 1746 (1927) German.

THE MANUFACTURE OF RUBBER GOODS FROM VARIOUS PRESERVED LATEXES AND THE PREVENTION OF TACKINESS.—Rudolph Ditmar. *Gum.-Zeit.*, 41, pp. 1688-9 (1927) German.

CAN LEAD IN RUBBER GOODS CAUSE POISONING? It is found that by proper mixing the individual particles or aggregates of litharge or lead sulphide are protected from attacks by envelop-

ing films of rubber.—Paul Alexander. *Gum.-Zeit.*, 41, p. 1682 (1927) German.

THE USE OF LATEX IN THE SHOE INDUSTRY.—E. A. Hauser. *Gum.-Zeit.*, 41, pp. 1750-1.

THE STABILIZATION OF VULCANIZED RUBBER. A discussion of aging influences and means of protecting rubber from deterioration.—P. Schidrowitz. *Rubber Age*, London, 8 pp. 124-5 (1927).

ADVANCES IN THE CHEMISTRY AND INDUSTRY OF RUBBER.—Fredrich Emden. *Zeit. Angew. Chem.*, 40, 423-8, pp. 455-62 (1927) German.

SOME OBSERVATIONS ON CHANGES IN SLAB RUBBER ON KEEPING.—W. Spoon. *Archief.*, 11, pp. 67-72 (1927) *Mededul. Proefsta Rubber*, 1927, No. 9, 6 pp. Summary in English.

X-RAY EXAMINATION OF RUBBER.—E. A. Hauser. *Naturwissenschaften* 15, p. 100 (1927).

SOME REMARKS ABOUT THE PRESERVATION OF FRESH FRUIT WITH LATEX.—W. Spoon. *Rubber Age*, London, June, 1927, pp. 157-59.

ESTATE PRACTICE IN THE COLLECTION AND CURING OF PLANTATION RUBBER.—F. W. G. Rippon, *Rubber Age*, London, June, 1927, pp. 164-66.

CADMIUM COLORS FOR RUBBER MANUFACTURE.—H. W. D. Ward. *Rubber Age*, London, June, 1927, pp. 171-72.

RUBBER PREPARED WITH PARANITROPHENOL AND ACETIC ACID. Manufacturers' tests.—H. P. Stevens. *Bulletin Rubber Growers' Assn.*, June, 1927, pp. 396-98.

RECLAIMED RUBBER. PART VI. Standardizing the staple line of reclaim.—C. E. Bishop. *Rubber Age*, New York, June 25, 1927, 299-300.

THE COMMERCIAL SYNTHETIC RESINS AND THEIR PRODUCTS.—Herbert W. Rowell, *Chem. and Indus.*, June 24, 1927, and July 1, 1927, pp. 573-77 and 592-98.

THE EFFECT OF WHEEL SETTING ON WEAR OF PNEUMATIC TIRES. Comparison of tread wear on front and rear tires. A theory of the scuffing action is developed but no definite theory for camber is found.—J. E. Hale. *Jour. S. A. E.*, July, 1927, pp. 41-48. Discussion.

CONTRIBUTIONS TO FURTHER SCIENTIFIC ESTABLISHMENT OF THE NEEDLE FORM THEORY.—E. Lindmayer, *Gum.-Zeit.*, June 17, 1927, pp. 2147-2148. Diagrams.

CRYSTAL INTERFERENCES IN RUBBER AND OTHER POLYPRENES. A short resumé of recent x-ray observation.—J. R. Katz. *Gum.-Zeit.*, June 3, 1927, pp. 2035-2038.

THE IDEAL TENSION AND THE RACKING OF RUBBER AT THE ELASTIC LIMIT. A contribution to disperse molecular kinetics of pure elasticity. I.—Dr. Heinrich Feuchter, *Kauts.*, May, 1927, pp. 149-153. Table, graph.

COMPARISON TABLES FOR STEAM-PRESSURE AND TEMPERATURE IN VULCANIZATION.—Dr. Werner Esch, *Kauts.*, May, 1927, 156-158. Tables.

THE APPLICATION OF THE ANALYSIS QUARTZ-LAMP ORIGINAL HANAU IN THE INVESTIGATION OF SOFT RUBBER PARTICULARLY FOR ACCELERATED AGING.—Martin Krahl, *Kauts.*, May, 1927, pp. 159-161. Table, illustrations.

ON THE RECOVERY OF VOLATILE SUBSTANCES BY CONDENSATION.—Dr. Georg Weissenberger, *Kauts.*, May, 1927, pp.. 162-163.

INVESTIGATIONS OF LAMP-BLACK IN RUBBER.—Dr. A. van Rossem and H. van der Meyden. *Kauts.*, May, 1927, pp. 166-174. Tables.

EXPERIMENTAL TAPPING OF HEVEA BUDDINGS.—Dr. C. Heusser. *Archief.*, May, 1927, pp. 169-175. Tables, English summary 176.

RESEARCHES ON THE OCCURRENCE OF HYDROGEN CYANIDE IN *Hevea Brasiliensis*.—Dr. W. Bobilioff. *Archief.*, May, 1927, pp. 177-182. English summary 183.

REGENERATED RUBBER AS A SUBSTITUTE FOR NEW RUBBER. A discussion of its properties and suitability for use in the manufacture of various classes of rubber goods.—R. L. Dupont. *Rev. gén. mat. plastiques* 3, pp. 258-61 (1927).

THE PRESENT STATUS OF THE PROBLEM OF THE MILDEW DISEASE OF HEVEA.—Dr. W. Bally. *Archief.*, May, 1927, pp. 184-213. Tables, illustrations, bibliography.

THE AGING OF RUBBERS. A review with bibliography of 33 references.—Paul Bary. *Rev. gén. mat. plastiques* 3, pp. 183-5, 250-3 (1927).

A HISTORY OF THE AMERICAN RUBBER INDUSTRY.—A. A. Somerville. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 83-9. In French and English.

THE BELGIAN RUBBER INDUSTRY.—Oscar Englebert. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 89-90.

HISTORY OF THE BRITISH RUBBER INDUSTRY.—Fordyce Jones. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 75-81. In French and English.

THE FRENCH RUBBER INDUSTRY.—W. Hausser. *Rev. gen. caoutchouc, Livre d'Or*, January, 1927, pp. 69-73.

THE GERMAN RUBBER INDUSTRY.—Walter Lindemann. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 94-101.

THE ITALIAN RUBBER INDUSTRY.—Alberto Pirelli. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 91-3.

RUBBER TIRES.—A description, with views, diagrams and charts, of the manufacturing process in all its details.—J. Audy. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 181-204.

PNEUMATIC AND SOLID TIRES. A general description.—M. E. Lucas. *Rev. gén. caoutchouc, Livre d'Or*, Jan., 1927, pp. 105-9.

RUBBERIZED FABRICS. A general description of the process of rubberizing.—G. Bernstein. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 122-7.

WATERPROOF GARMENTS OF RUBBERIZED FABRICS. Origin, applications and technique.—Gustave Mouton. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 128-9.

THE EBONITE INDUSTRY. A description dealing with the historical aspects, the nature and composition of ebonite, its vulcanization, accelerators and other ingredients, its mechanical, thermal, electrical and chemical properties, its aging, its applications and the future of the industry.—Paul Jeantet. *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 113-22.

EBONITE LININGS. A general description, with formulas for solutions, hard and semi-hard sheet and pipe linings.—J. Panem, *Rev. gén. caoutchouc, Livre d'Or*, January, 1927, pp. 223-5.

A STUDY OF THE INFLUENCE OF MOISTURE ON RUBBER TESTING. The results show, in general, that moisture plays a very large part in the physical properties of rubber goods, whether it is absorbed before or after curing, and that the amount of change is roughly proportional to the amount of water absorbed.—F. S Conover and H. A. Depew A. S. T. M., 1927 Preprint.

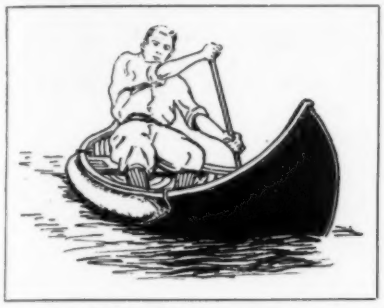
PREPARING TIRES FOR WINDOW DISPLAYS

Tire dealers are advised that nothing will better vitalize a "slow" business than a good "selling" window, but that all displays should be changed at least once a month. As to the preparation of the tires to be featured, the quickest way of making the casing appear well is to put on with a brush a coat of tire paint. Some customers, however, object to buying a tire that has been used for show purposes, and a better method of preparing the casing is the one used by the United States Rubber Co. The tire in question is rubbed all over with a mixture of one-third gasoline and two-thirds glycerine, this providing a uniformly clean, black surface, which does not in the least interfere with the later sale of the tire. The name of the tire, its size and trade mark, embossed on its side wall, are painted over, and this side of the casing is so placed as to face the street. The painting can be done either with show card colors or gold and silver paint. It should be remembered, however, that while show card colors can be easily rubbed off with a damp cloth, scraping is necessary for the removal of gold or silver paint. The decorator is also advised that in painting over the lettering on the tire the color scheme of the entire window display should be kept in mind.—*The U. S. Tire Retailer.*

New Goods and Specialties

Pocket Canoe Sponson

An ordinary canoe may be effectively transformed into a sailing canoe by the use of two pairs of the pictured sponsons which are made of rubber and cloth put together by hydraulic pressure. They are only four feet long and six inches wide, weigh one pound each, and can easily be blown up with the breath. The sponsons fasten on to the end of the canoe with brass brackets, and when deflated may be carried in the pocket.—Fiala Outfits, Inc., 25 Warren street, New York, N. Y.



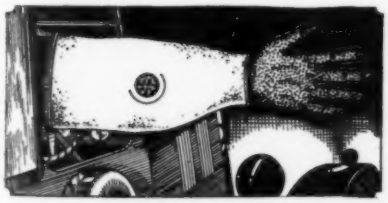
Collapsible Sponsons.

Rubber Lined Crib

Modern day hospitals are making use of a rubber lined crib, or bassinet, in which to place the new born baby immediately after birth. The crib is electrically heated to a temperature of 90 degrees, the rubber protecting the baby from the inclemencies of outside weather, and "made-to-order" weather, with correct proportions of air, scientifically heated and humidified, is brought in by powerful ventilating fans.

Driver's Signal Sleevelet

To add to the safety of driving in the dark a simple little device to be worn by the motorist shows every movement of the driver's arm by night as well as by day. It consists of an armlet made of white rubber, at the back of which is fitted a red reflector, the rubber also serving as a protection against mud and dirt in rainy weather. The sleevelet covers the arm from elbow to wrist.—St. Helen's Cable & Rubber Co., Ltd., Slough, England.



Motorist's Armlet

Self-Adjusting Flap

A new flap is announced by The Gates Rubber Co., Denver, Colorado, which is made of two plies of sturdy fabric and one extra heavy ply of rubber, molded to fit the casing. This material being non-absorbent and waterproof will not rust the rim. The valve stem is inserted through the hole in the middle point of the flap which locks it in position. The ends overlap and are self-adjusting to fit any size of passenger car tire.

Novel Soap Dishes

A common annoyance in the bath is the elusiveness of the soap, which slips and sinks and is never where it can be found. A dish has been designed by the I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y., which will hold the soap and float on top of the water. One dish is in the form of a frog and another takes the shape of a turtle, the top of the animal being hollowed out to form a receptacle for the soap. Floating on top of the tub, they will also come in handy to amuse the baby during the trying time of the bath hour.

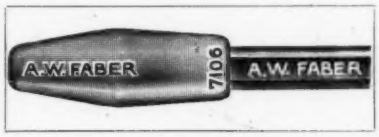
Frog and Turtle Soap Dishes

Wet Weather Garment

Men's wet weather sport garments to be worn over golf clothes are a novelty on display at Abercrombie & Fitch, New York, N. Y. The garments are made of light weight rubber and can be folded to fit in a small rubber or silk bag and carried in the pocket. The front of the jacket and the side pockets fasten with slide fasteners, while the trousers are secured at the waist and knees with elastic. The suit may be put on or taken off very quickly and easily, and affords ample protection in the heaviest downpour.

Eraser and Point Protector

A novelty displayed in various shop windows is a combination rubber eraser and point protector cap. When not used as an eraser it can be placed over the point of the pencil as a guard against breaking, and further serves as a clip if the pencil is inserted in the pocket with the cap downward, the contact of the cap with the inside of the pocket holding the pencil secure. The manufacturer is A. W. Faber, Inc., Newark, New Jersey.



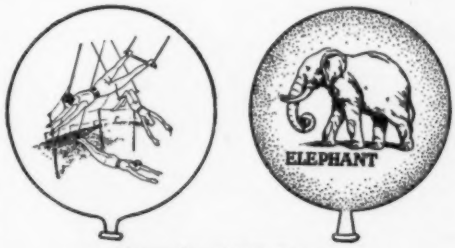
Pencil Eraser and Protector

Golf Ball

A golf ball designed to give the maximum of service, and retain its speed and snap, giving greatest distance from wood or iron clubs without sacrificing wearing qualities, is claimed for the Darby Flyer by the manufacturer. It is made with a solid rubber core around which is wound, under correct tension, a live rubber thread. After this combination is brought up to the proper size on an automatic winding machine, the ball is covered with balata shells in mesh marking, thoroughly vulcanized into the rubber core, and brilliantly finished in white enamel. Darby Flyer is a splendid putting ball being absolutely true due to the fact that the rubber core is perfectly centered. It will stand up well in actual play, and does not easily cut or mar.—Associated Golfers, 338 Brown street, Philadelphia, Pennsylvania.

Thrills from the Circus

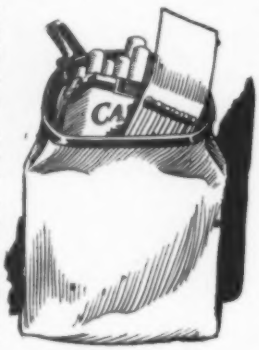
The appeal of the circus is universal, and the special balloons picturing some of the thrills of white tops are very popular, not only on the circus lot, but everywhere. Real circus atmosphere is portrayed with typical scenes or circus animals pictured on one side, the reverse side printed with the show name. Two styles of balloons are furnished: opaque gas, inflating 10 inches in diameter, and transparent gas, inflating 11 inches in diameter.—The Oak Rubber Co., Ravenna, Ohio.



Circus Special Balloons

Rubber Pocket for Bathing Suit

Necessary articles may be carried while enjoying a swim in the surf, and cigarettes, powder, handkerchief, etc., be ready for use on emerging for the sun bath, if the bathing suit is supplied with a rubber pocket.

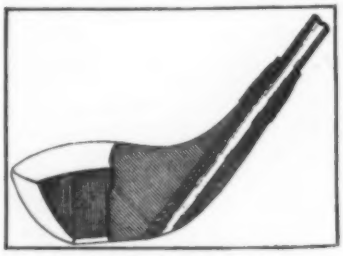


Submarine Pocket

The Submarine watertight pocket keeps everything dry, it is said, and a specially designed lock makes it thiefproof, so that valuables, too, may be carried with absolute safety. It is made in various styles and colors to match the popular types of bathing suits, and carries a guarantee for the life of the suit.—Waterproof Pocket Corporation, 3 West 22nd street, New York, N. Y.

Cushion Neck Golf Club

A new feature of much interest to golfers in connection with golf clubs, is the patented device pictured for making a resilient union between the metal shaft and the wood heads of drivers, brassies and cleeks.



The Heller Golf Club

As indicated in the sectional drawing a resilient rubber sleeve is interposed between the tubular steel shaft and the head of the club. This is securely attached to both head and shaft by rubber cement and exerts a most desirable resilient effect when a stroke is made.

The resilient rubber, by absorbing the vibrations, prevents splitting the thin wall of wood where the head tapers off to a thin edge around the steel shaft. With this resilient construction there is practically no liability of the damage mentioned occurring. The usual sewing of silk thread laid around the thin wood at this point on the outside is retained. The winding can be and often is protected by covering it with a sleeve of rubber tubing to prevent unwinding and excludes moisture.—A. G. Spalding & Bros., 105 Nassau street, New York, N. Y.

Rubber Substitute Pads

The surface texture of rubber substitute and its soft resilient feel admirably adapt it for pads used in trusses. The ease with which the material can be molded into any desired shape and its stability or aging quality insure satisfaction in service.

A somewhat unusual adaptation is the use of special pads for the seat and sides of racing saddles. The pads are of intricate shape, confined under the outside leather, and give a full year of service.

Satin Finish Gum Rubber

Through a special process, E. I. duPont de Nemours & Co., Fairfield, Connecticut, has perfected a satin finish gum rubber. The usual finish is so softened that it has the effect of a fine fabric rather than a rubber surface. It is available in eight popular colors including silver gray, rosewood, blue, green and in beauful mottled effects combining all these shades.

Naiad Apron

The satin finish is particularly appropriate and beautiful for tea aprons, a full assortment of which is manufactured by The C. E. Conover Co., 319 Fifth avenue, New York, N. Y., under the trade name of Naiad. They are made with contrasting two-toned ruffles, pouch pockets, and distinctive floral decorations.

Weedless Ball Bait

A bait claimed to be one hundred per cent weedless is made from a small, flexible red and white rubber ball which protects three hooks. It is equipped with a spinner made in all the colors of the rainbow, forming a never-failing lure for surface or deep water fishing.—Progressive Tool & Manufacturing Co., 559 West Quincy street, Chicago, Illinois.

Helle's Weedless Bait

Rubber Lining for Ties

One of the newest items in men's neckwear is the rubber lined tie, available in all the latest patterns and color effects. The resiliency of the rubber helps to prevent wrinkles and creases forming and its light weight enables a better knot to be tied.

Rubber Golf Tee

A new rubber golf tee that saves time and improves the game is the claim of the manufacturer for the O-Katy tee. It is so soft and light that it is impossible to knock it any considerable distance, and it cannot easily be lost because of its bright color and size. The ball is held securely by the large cup, and the tee offers no resistance to the club as it goes through. The same height is given each shot, and, if too high, may be lowered ⅛-inch by cutting off below the top bearing.—Acushnet Process Co., New Bedford, Massachusetts.

New Basketball Shoe

A scientifically designed basketball shoe made to fit and protect the feet is called the Gray Streak. It is built on a special narrow shank last with a sponge rubber arch cushion. The wide instep stay fits closely around the instep, giving added protection and support, while the cushion heel absorbs the shocks and will prevent blisters and bruises. The non-slip sole clings and grips the ground, an important feature in basketball with its quick stops, starts and pivots.—The Draper-Maynard Co., Plymouth, New Hampshire.

Gray Streak

Hot Water Bottle

The chemist Wilhelm Ebmeier, Wiesbaden, has patented a new rubber hot water bottle which differs from the usual type of bottle in that the surface instead of being smooth is rendered uneven by bosses, ribs and other protuberances. In addition, there is a raised border which goes all around the bag. It is claimed that the raised portions, by preventing the bag from slipping and helping it better to conform to the body, eliminate the circulation of free air between the body and the bag and thus assist in maintaining a good and even distribution of heat.

Rubber Wins in Floor Covering Case

The Appellate Division of the Supreme Court has reversed the decision of the lower court in the matter of the installation of rubber tiling, cork tiling and linoleum in buildings over 150 feet in height. This final decision, with only Justice Victor J. Dowling dissenting, is of especial importance, as it permits the use of the floor covering above mentioned, has reversed the action of the Board of Standards and Appeals, and is claimed to have overturned the Building Department practice of a quarter of a century.

The dispute originated when the Board of Standards and Appeals of the City of New York affirmed a decision of Charles Brady, Superintendent of Buildings, refusing to issue a certificate of occupancy for the buildings known as 471-477 Fifth avenue, New York City. Such refusal was based upon the fact that in this fireproof building, over 150 feet in height, about 27 per cent of the floor area was covered with linoleum, cork, or rubber tiling cemented to the finished floor surface. It is significant however that, except for this surfacing, the floors were constructed in exact compliance with the law and were strictly fireproof. They were made of a four-inch cinder concrete slab, upon which was laid three inches of cinder fill, upon which, in turn, was laid one inch of finished cement.

The Appellate Division held, according to Justice Joseph M. Proskauer, that Section 356 of the Building Code had not been violated, as the combustible material in question had been used "upon" and not "in" the floors. It is further stated: "If the petitioner had tacked or cemented to the surface of the floor carpet with paper lining, no criticism could have been made. The carpet would not be regarded as part of the floor structure. There is no greater fire hazard in the use of what really is only a carpet of linoleum, rubber tiling, or cork. Such a floor covering is in no true sense a part of the structure of the building; placed upon fireproof concrete and cinder floors, it is a mere furnishing."

On May 3, Alderman Campbell introduced the following amendment to Section 356 of the Building Code. . . . .

(3) Restriction in buildings over 150 feet high. When the building exceeds 150 feet.

(a) The flooring shall be of incombustible material or of fireproof wood, provided that in public halls and stairways no wood of any kind, except for handrails, shall be used; but nothing in this article shall prevent the use, cemented to such flooring, except in stairways, of wearing surfaces of linoleum, cork composition, or rubber composition, not exceeding one-half inch in thickness.

The amended ordinance was approved by the Board of Aldermen July 12 and signed by Mayor Walker on July 22.

Legal Decisions

COMBINED BRASSIÈRE AND DRESS SHIELD. Patent No. 1,632,547 was issued to Guinzburg on June 14, 1927, for an improvement in combined brassiere and dress shield, on application filed November 12, 1925.

This is an appeal from the decision of the examiner finally rejecting the single claim in the case on the grounds (1) of calling for new matter and (2) in view of the state of the art disclosed in the references.

The examiner-in-chief considers that the claim should be allowed and the application passed to issue in the absence of more specific and pertinent art. The decision of the examiner finally rejecting the claim is reversed.

INNER TUBE and CASING. Appeal 13,478.—Patent No. 1,633,963 for pneumatic tires was granted to Daniel M. Weigel June 28, 1927, on application filed August 20, 1921. The examiners-in-chief of the Patent Office find that the claims for a wire reinforced inner tube are patentably new. The case represents an appeal from a decision rejecting all claims of the application 1 to 6. The decision of the examiner finally rejecting claims 1 to 6, inclusive, is therefore reversed.

RUBBER HEEL. This is a suit in equity brought by the I. T. S. Rubber Co. against the Essex Rubber Co. in the Federal District Court for Massachusetts, for the infringement of United States Patent No. 14,049, on resilient heels, reissued to the I. T. S. Co. January 11, 1916, as assignee, on an original patent to John G. Tufford, issued in 1914. After final hearing on the pleadings and proof the bill was dismissed by the district court for want of infringement. This was affirmed by the Circuit Court of Appeals, 1 F. (2nd) 780. And there being a conflict of opinion with the Circuit Court of Appeals for the Sixth Circuit as to the scope of the patent, this writ of certiorari was granted.

The Essex Co., which manufactures and sells the heels alleged to infringe, expressly admitted the validity of the reissued patent And the only questions are: first, whether it is estopped to deny infringement; second, if not, whether infringement is shown.

The decision in the Supreme Court of the United States was that the Essex type of heel did not represent an infringement, and the decree of the circuit court of appeals was affirmed.

RUBBER PAVING BLOCK. Court of Appeals of the District of Columbia, in re Clark, No. 1,891. Decided February 7, 1927.

Where applicant's claims 11 to 19 included a rubber paving block of uniform thickness having on its lower surface projections arranged in spaced relation both lengthwise and crosswise of the surface, and in the patents to A. and F. the blocks do not have uniform thickness while in the patents to A. and D. the projections are spaced in one direction only. Held that applicant in combining a block of uniform thickness with projections which interlock with a base and prevent creeping in both directions is entitled to protection and the claims are patentable.

The decision of the Commissioner of Patents rejecting claims 11 to 19 inclusive is reversed; and his decision rejecting claims 20 to 28 inclusive is affirmed.

Customs Appraisers' Decision

GUM. Merchandise classified as crude chicle at 10 cents per pound under paragraph 25, tariff act of 1922, is claimed entitled to free entry under paragraph 1584 as a gum not specially provided for. Opinion by J. McClelland. In accordance with stipulation of counsel and on the authority of Chicle Development Co. *v.* United States (T. D. 41894) the gum in question was held entitled to free entry under paragraph 1584 as claimed. *Treasury Decisions*, Volume 51, p. 46.

Patent Suits

No. 1,537,879, A. L. Putnam, pneumatic-treaded vehicle wheel, filed April 26, 1927, D. C., E. D. Mich. (S. Div.), Doc. 2008, Steel Wheel Corp. v. B. F. Goodrich Rubber Co.—*Official Gazette*, Volume 359, page 501.

No. 1,570,298, A. H. Fisher, method and means for repairing tire casings, filed May 2, 1927, D. C. Minn. (Duluth), Doc. E 242, Kex Co., Inc., v. E. Hanike.—*Official Gazette*, Volume 359, page 743.

No. 1,605,445, F. L. Killian, machine for manufacturing thin rubber articles, filed May 6, 1927, D. C., N. D. Ohio (E. Div.), Doc. 2213, P. H. Stevens v. The J. L. Shunk Rubber Co.—*Official Gazette*, Volume 359, page 743.

RUBBER DIVISION A. C. S. SYMPOSIUM

It has been officially announced that the Rubber and Organic Divisions of the American Chemical Society will hold a joint symposium on polymerization at the 1928 spring meeting in St. Louis.

At the Detroit meeting, the Rubber Division will meet Wednesday, September 7, morning and afternoon, Thursday morning, Friday morning and afternoon also if necessary.

The Executive Committee will submit to the meeting at Detroit the results of their efforts to meet the demands of the division for enlargement of its activities along three suggested lines which have already met with the approval of a large majority of the membership as expressed by a vote taken by mail.

Goodrich's Reply in Putnam Suit

IN a suit in equity against The B. F. Goodrich Rubber Co., the Steel Wheel Corp., Lansing, Michigan, has filed in the district court of the United States for the eastern district of Michigan, southern division, a bill of complaint which states that Alden L. Putnam is the first, sole and original inventor of the balloon tire. His application for a patent was filed August 13, 1920, and was granted letters patent No. 1,537,879, May 12, 1925.

The complainant alleges that its notice not to infringe this patent was not heeded by the Goodrich company, resulting in loss for which the Steel Wheel Corp. asks damages and an accounting.

The Goodrich company in its answer to the complaint admits the existence of patent No. 1,537,879 but denies its validity because Putnam was not the original and first inventor of the alleged improvements described and claimed, but that these in all their material and substantial parts were known and used by others in this country before his alleged invention or discovery was patented. Furthermore, these improvements were described in printed publications more than two years prior to Putnam's patent application.

In connection with this claim a number of United States and British patents were cited, also several groups of automobile trade papers and engineering publications. The names are given of several tire companies having possessed knowledge of prior use and sale of balloon tires.

On these assertions is based the contention that the subject matter of the Putnam patent was not patentable within the meaning of the law. Further that the claims are indefinite and ambiguous. In view of the answer above outlined the Goodrich Company asks dismissal of the bill of complaint.

The following bill of complaint and the answer are published through courtesy of *Tires*:

Bill of Complaint

To the honorable judges of the district court of the United States, for the eastern district of Michigan, southern division, in equity sitting:

Steel Wheel Corp., plaintiff, brings this, its bill of complaint, against The B. F. Goodrich Rubber Co., defendant, and says:

1. The plaintiff, Steel Wheel Corp., is a corporation duly organized and existing under the laws of the state of Michigan, having its principal place of business at Lansing, Michigan.

2. The defendant, The B. F. Goodrich Rubber Co., is a corporation duly organized and existing under the laws of the state of Michigan, having a place of business at Detroit, Michigan.

3. That this is a suit in equity arising under the patent laws of the United States, based upon the infringement of letters patent No. 1,537,879, dated May 12, 1925.

4. That on the 13th day of August, 1920, Alden L. Putnam, being, as plaintiff is informed and believes, the first, original and sole inventor of a certain new and useful improvement in pneumatic treaded vehicle wheels not known or used by others in this country before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof or more than two years prior to his application hereinafter mentioned, and not in public use or on sale in this country for more than two years prior to the date of said application, and which has not been abandoned, nor patented, nor caused to be patented by himself or his legal representatives or assigns in any foreign country on an application filed more than twelve months prior to his application in this country, duly filed in the United States Patent Office an application for letters patent for said invention and that, thereafter on the 12th day of May, 1925, all the requirements of the statutes of the United States then in force having been complied with, letters patent Number 1,537,879 were duly issued upon said application to Detroit Pressed Steel Co., of Detroit, Michigan, a corporation of Delaware, as the assignee of said Alden L. Putnam, which said letters patent, or a duly certified copy thereof, plaintiff will produce as this court may direct.

5. That the plaintiff here is now and has been continuously since on or about October 25, 1926, by reason of direct and mesne assignments, the owner of the entire right, title and interest in and to the said invention, and in, to and under said letters patent of the United States Number 1,537,879, together with the right to sue and recover for past infringement, as will appear from said instrument or instruments or duly authenticated copies thereof which plaintiff is ready to produce in court.

6. That when the adoption of said invention was first proposed to tire manufacturers by said Putnam and continually advocated for a considerable time thereafter, his proposals were generally received with skepticism, the tire industry as a whole viewing the invention as a doubtful practicability and as undesirable by reason of the fact that said proposals represented a radical deviation from long established and accepted standards as to relation of sizes, structures and pressures to load and also by reason of the fact that changes from such standards suggested by others have proven to be impractical and unsatisfactory; it was only after repeated tests and demonstrations that said Putnam was able to secure any serious consideration of his proposals in reference to introducing his invention to the public on a commercial scale; that after said Putnam did obtain serious consideration and adoption of his invention, manufacturers, including this defendant, came to the realization of the desirability and advantages of the said innovation in practice as represented in the said invention and when the public experienced the advantages of the said invention the demand on the part of the public was so great that said invention resulted in a revolutionizing of tire and wheel equipment on motor vehicles, notwithstanding the fact that equipment embodying said invention commands a considerably higher price than equipment of the former standard types that would be specified in like situations.

7. Plaintiff alleges that the invention disclosed and claimed in said letters patent is of great merit and has gone into extensive use and the exclusive rights in and to the same as secured by said letters patent are of great value to plaintiff.

8. Plaintiff has given notice to the trade that the said invention is patented and has given special notice to this defendant of the existence of said letters patent, of plaintiff's ownership of the exclusive rights thereunder and the infringements herein complained of.

9. That since the issuance of said letters patent No. 1,537,879 and the giving of said notices, the defendant, The B. F. Goodrich Rubber Co., well knowing the premises and in open wilful defiance of plaintiff's rights, and in disregard of said notices and in violation of law has infringed claims 1 and 2 and/or contributed to the infringement of claim 3 of said letters patent No. 1,537,879, and has invaded the exclusive rights secured to plaintiff thereunder by making, using and selling and/or causing to be made, used and sold in the eastern district of Michigan, southern division, and elsewhere in the United States, pneumatic tires and/or pneumatic treaded vehicle wheels embodying the invention of said letters patent No. 1,537,879 as described and claimed therein. That the defendant has continued its infringement after receipt of plaintiff's notices as aforesaid, is infringing at the present time and threatens to continue the same.

10. The infringement by defendant has caused plaintiff great loss and damage and has resulted in large gains and profits to defendant. Defendant's exclusive rights have the effect to encourage others to infringe the said letters patent, and unless defendant be enjoined forthwith, from further infringement, plaintiff will suffer irreparable damage. Plaintiff has no knowledge as to the extent of the infringement by defendant or the amount of profits realized by defendant from its infringement and has no means of ascertaining the same except through a discovery and accounting by defendant.

Wherefore, plaintiff prays:

(a) That a subpoena be issued out of this honorable court directed to the defendant commanding it to appear and answer this bill of complaint but not under oath, answer under oath being hereby expressly waived.

(b) That the defendant, its officers, representatives, agents, employes, workmen and attorneys, and all others acting for defendant and in its behalf, be enjoined and restrained, during the pendency of the suit and, thereafter, perpetually for the term of the said letters patent from making, using and/or selling and/or causing to be made, used or sold and/or offering for sale pneumatic tires and/or pneumatic-treaded vehicle wheels in infringement of letters patent No. 1,537,879.

(c) That defendant be ordered to make a full and specific discovery and accounting of all the gains, profits and savings which it has made from infringement of said letters patent, and to pay the same over to the plaintiff, with interest, together with the damages the plaintiff has sustained by reason of said infringement and together with the costs of this litigation.

(d) That plaintiff may have such further relief as the nature of the case may require and to this court may seem meet and proper and in accordance with equity and good conscience.

Answer to Complaint

The B. F. Goodrich Rubber Co., the defendant herein, answering the bill of complaint, says:

1. It is without knowledge as to the allegations of paragraph 1 of the bill of complaint.

2. Answering paragraph 4 of the bill of complaint, it admits that on or about August 13, 1920, one A. L. Putnam filed in the United States Patent Office an application for letters patent for an alleged invention in pneumatic treaded vehicle wheels, and that on May 12, 1925, letters patent No. 1,537,879 were issued upon said application to Detroit Pressed Steel Co., Detroit, Michigan, a corporation of Delaware, as the assignee of said Putnam; upon information and belief it denies each and every other allegation of said paragraph.

3. It is without knowledge as to the allegations contained in paragraphs 5 and 6 of the bill of complaint.

4. Upon information and belief, it denies the allegations contained in paragraphs 7, 9 and 10 of the bill of complaint.

5. Answering paragraph 8 of the bill of complaint, it is without knowledge as to what, if any, notice the plaintiff has given to the trade as alleged in said paragraph; it admits that the plaintiff has notified it of the existence of said letters patent and of the plaintiff's alleged ownership of exclusive rights thereunder and of the alleged infringement herein complained of.

6. Upon information and belief, it avers that the aforesaid Putnam patent is invalid and void because the said Putnam was not the original and first inventor of the alleged improvements described and claimed therein, but the same, in all of their material and substantial parts, were known and used by others in this country before his alleged invention or discovery thereof were patented and described in printed publications in this and foreign countries before his alleged invention or discovery thereof and more than two years prior to his application for patent, and were in public use and on sale in this country for more than two years prior to his said application.

(a) That the patents and printed publications referred to, insofar as they have at present been ascertained, are as follows:

UNITED STATES PATENTS

Thomson	5,104	May 3, 1847
Shaefer	722,459	Mar. 10, 1903
Gammeter	1,188,062	June 20, 1916
Carlisle	1,345,944	July 6, 1920
	(Application filed Aug. 2, 1919)	
Hawley—1,433,008	Oct. 24, 1922	
	(Application filed Dec. 10, 1912)	

BRITISH PATENTS

Dunn—6,585 of 1911
Killen—139,930 March 18, 1920

PUBLICATIONS

Group I

(Relating particularly to the British "Palmer Tyre" and to the manufacture of the same tire in the United States by the Diamond Rubber Co., and The B. F. Goodrich Co., of Akron, Ohio: (1) The *Motor World*, U. S. A., Dec. 17, 1903, p. 426. (2) The *Automotor Journal*, British, May 30, 1908, p. 721. (3) *Motor*, British, Aug. 4, 1908, pp. 7, 8. (4) Palmer Cord Tyres, published by The Palmer Tyre, Ltd., London, Eng., March 1, 1909, pp. 26-29, 35, 36. (5) The *Motor World*, British, Dec. 30, 1909, p. 1118. (6) Palmer Cord Tyres, published by The Palmer Tyre, Ltd., London, Eng., 1910, pp. 22-25, 28, 29. (7) The *Motor World*, British, June 8, 1911, p. 555. (8) The *Motor News*, British, March 9, 1912, p. 435. (9) The *Automobile*, U. S. A., Oct. 22, 1914, p. 765. (10) The *Motor World*, U. S. A., May 26, 1915, p. 24. (11) The *Autocar*, British, July 17, 1915, p. 64. (12) The *Motor*, British, Jan. 18, 1916, p. 679. (13) The *Automobile*, U. S. A., Jan. 27, 1916, p. 194. (14) The *Motor World*, U. S. A., Nov. 22, 1916, p. 8. (15) The *Motor World*, British, June 21, 1917, advertisement of Palmer Tyre, Ltd.

Group II
(Miscellaneous)

(1) The *Horseless Age*, U. S. A., Nov. 1895, p. 18. (2) *Cycle* and *Automobile Trade Journal*, U. S. A., Feb. 1, 1900, p. 21. (3) The *Motor Vehicle Review*, U. S. A., May 8, 1900, pp. 5, 6. (4) *India Rubber Journal* Supplement, British, March 28, 1904, p. 100. (5) The *Automotor Journal*, British, March 24, 1906, pp. 357, 358. (6) The *Motor World*, U. S. A., Oct. 31, 1907, p. 267. (7) The *Motor World*, U. S. A., June 18, 1908, p. 391. (8) The *Horseless Age*, U. S. A., Feb. 16, 1910, pp. 251, 252. (9) The *Autocar*, British, May 21, 1910, p. 690. (10) The *Automobile*, U. S. A., Sept. 26, 1912, p. 642. (11) Die Leistungsverluste und die Abferderung von Kraftfahrzaugen, by Erich Bobeth, Berlin, 1913, particularly pp. 172, 228. (12) The *Automobile*, U. S. A., August 14, 1913, pp. 298, 299. (13) The *Automobile*, U. S. A., Jan. 15, 1914, p. 198. (14) The *Motor*, British, Jan. 27, 1914, p. 1289. (15) The *Automobile*, U. S. A., Oct. 1, 1914, pp. 624, 629. (16) The *Automobile*, U. S. A., Oct. 22, 1914, p. 761. (17) The *Automobile*, U. S. A., June 10, 1915, pp. 1020-1022; 1037-1040. (18) The *Automobile*, U. S. A., June 22, 1916, p. 1132. (19) *Scientific American*, U. S. A., Nov. 3, 1917, p. 331. (20) The *Journal of the Society of Automotive Engineers*, U. S. A., January, 1918, Vol. II, No. 1, pp. 66-70.

(b) That the instances of prior knowledge and use by others, and prior public use and sale, above referred to, insofar as they have at present been ascertained, are as follows:

Group I

(Instances relating particularly to the use in the United States of the British "Palmer Tyre" and the manufacture of the same tire in the United States): (1) Arthur H. Marks, formerly vice president, Diamond Rubber Co., Akron, Ohio, at Akron, Ohio. Mr. Marks' present address is c/o Skinner Organ Co., New York, N. Y. (2) Diamond Rubber Co., of Akron, Ohio, at Akron, Ohio, and elsewhere in the United States.

Group II
(Miscellaneous)

(1) The B. F. Goodrich Co., Akron, Ohio, at Akron, Ohio, and elsewhere in the United States. (2) The Goodyear Tire & Rubber Co., of Akron, Ohio, at Akron, and elsewhere in the United States. (3) The General Tire & Rubber Co., of Akron, Ohio, at Akron, and elsewhere in the United States. (4) The United States Rubber Co., of Hartford, Connecticut, at Hartford, Connecticut. (5) Baker Motor Vehicle Co. of Cleveland, Ohio, at Cleveland and elsewhere in the United States. (6) Stutz Motor Car Co., of Indianapolis, Indiana, at Indianapolis, and elsewhere in the United States. (7) F. Lee Herreshoff, of New York, N. Y., at New York and elsewhere in the United States.

(7) Upon information and belief, it avers that the aforesaid Putnam patent is invalid and void for each of the following reasons:

(a) Because of the alleged invention described and claimed therein did not constitute patentable subject matter within the meaning of the patent law in view of the state of the art and in view of what was common knowledge on the part of those skilled in the art, all prior to the date of the alleged invention by Putnam.

(b) Because the description of the invention in the specification is not in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it appertains, or to which it is most nearly connected, to make, construct, compound and use the same.

(c) Because the claims of the patent are indefinite, ambiguous and uncertain and do not particularly point out and distinctly claim the part, improvement or combination which the patentee claims as his invention or discovery.

(d) Because the alleged invention, if novel at all, which the defendant denies, differs from what was well known in the prior art only in matters of degree, size or proportion and therefore is devoid of patentable novelty.

WHEREFORE, the defendant prays that the bill of complaint be dismissed with cost to the defendant.

Painting Golf Balls

JOHN H. JOHNSON

PAINTING golf balls like many other things has been a matter of evolution. The prerogative of the golfing public to change its mind like most people, has resulted in the present beautiful white finish noted on most golf balls. It is simply a reversion to the original finish in the times when the demand was for a perfectly white ball that could be readily seen, that would not gather dirt too easily, and would withstand the impact of the clubs without crazing or chipping off.

It is a fact that most golfers do not realize the severe punishment that the paint on a golf ball withstands. Under the impact of the driver the surface is flattened to the extent that were it possible to keep it in that position permanently, a silver dollar would practically lay flat on the surface. Due to the composition of the golf ball this is not so much a strain on the ball as on the paint, as the ball if perfectly made must resume its original shape and consequently the paint must follow, but at the same time adhering firmly to the surface without chipping off.

In the early times golf ball manufacturers found by experimenting that the chipping was not due so much to the paint as to the impurities in the cover of the ball, certain solutions forming on the surface which retarded the drying and adhering of the paint to the surface of the ball. At that time the paint manufacturer was more or less held within bounds due to the fact that the demand was for a perfectly white ball. Consequently the liquid vehicle which was the real elastic quality of the enamel had to be kept within certain limitations in order not to turn yellow.

Practically over night the situation changed. In order to obtain a finish which would not crack, even under abnormal conditions, the golfing public decided to accept a golf ball with a yellowish cast which is due to the use of a final coat of glaze or varnish. The yellowing of the latter can in no way be controlled. There is no question but the glaze added life and protection to the paint, but the golfing public again changed its mind and demanded a white ball. This created a new problem for the paint manufacturer, in view of the fact that in the meantime most of the golf ball manufacturers had in one way or another changed their rubber stock.

Certain difficulties, however, have been overcome, and today satisfactory finishes are produced which will adhere to the surface of the ball and stand at least a reasonable amount of exposure to water, which heretofore has been the bugaboo of the golf ball manufacturer. The pigments used in the construction of golf ball enamels consist of lithopone, titanox, zinc and at times other pigments used in combination with long oil varnishes, the resulting paint or enamel being extremely elastic and at the same time possessing the necessary hardness to resist abrasion. Of course, it is essential that the paint should dry hard and not develop tack by heat, otherwise it would pick up dirt and become unsightly. The enamel must also possess good water resisting properties. Variations in the cover stock of the golf balls must be watched carefully for indications or presence of impurities, as the cover composition has a marked effect, not only on the drying of the paint but also on its durability.

There are many methods used for the application of golf ball enamel, the old time hand rolling, spraying, tumbling and centrifugal. By the spraying process it requires approximately five coats of paint consisting of one coat of undercoat and four of enamel. The consistency of paint for hand rolling must be determined by experience and good results can only be obtained after long practice. The same applies to the spraying method with the exception that it can be better standardized as the amount of reduction of the enamel—usually 15 to 20 per cent—can be depended upon to give the proper consistency. For centrifugal use the paint is usually heavy, the ball being dipped into a heavy paint before whirling, and the excess thrown off by centrifugal force. It is the consensus of opinion that good results are not obtained by the tumbling process as there is the great danger of filling up the impressions of the ball and therefore interfering with the flight. This method is very little used.

Regarding repainting of balls, the old paint must first be removed with a weak caustic solution, the balls then washed thoroughly with water, and the same process as in the finish of a new ball followed.

Financial and Corporate News

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Akron Rubber Reclaiming Co.	Com.	$0.50 q.	July 15	July 1
Akron Rubber Reclaiming Co.	Pfd.	$2.00 q.	July 15	July 1
Binney & Smith Co.	Com.	2% q.	July 15	June 29
Binney & Smith Co.	Com.	8% ex.	July 15	June 29
Cambridge Rubber Co.	Com.	1¾% q.	July 1	June 15
Dominion Rubber Co.	Pfd.	1¾% q.	June 30	June 24
du Pont, E. I., de Nemours & Co., Inc.	Deb.	1½% q.	July 25	June 9
du Pont, E. I., de Nemours & Co., Inc.	Com.	$1.50 ex.	July 6	June 1
Electric Hose & Rubber Co.	Com.	1½% q.	July 15	July 8
Electric Hose & Rubber Co.	Com.	½% ex.	July 15	July 8
Fisk Rubber Co.	1st Pfd.	1¾% q.	Aug. 1	July 15
Fisk Rubber Co.	2nd Pfd.	1¾% q.	Sept. 1	Aug. 15
General Tire & Rubber Co.	Com.	50c. q.	Aug. 1	July 20
Goodall Rubber Co.	Com.	$2.50 q.	July 15	.....
Goodall Rubber Co.	Com.	$5.00 ex.	Aug. 1	July 15
Hood Rubber Co.	7% Pfd.	1¾% q.	Aug. 1	.....
Hood Rubber Co.	7½% Pref.	$1.87 q.	Aug. 1	July 21
Manufactured Rubber Co.	Pfd.	1½% q.	July 11	June 30
Mexican Crude Rubber Co.	Com.	20c. q.	July 1	June 25
Miller Rubber Co.	Com.	$0.50 q.	July 25	July 5
Seiberling Rubber Co.	Pfd.	2% q.	July 1	June 20
Stedman Products Co.	Pfd.	$1.75 q.	July 1	June 24
United States Rubber Co.	1st Pfd.	2% q.	Aug. 15	July 20
Westinghouse Electric & Mfg. Co.	Pfd.	$1.00 q.	July 15	June 30
Westinghouse Electric & Mfg. Co.	Com.	$1.00 q.	July 30	June 30

New York Stock Exchange Quotations

July 22, 1927

	High	Low	Last
Ajax Rubber, com.	8⅜	8¼	8⅜
Fisk Rubber, com.	15⅝	15½	15⅝
Goodrich, B. F. Co. (4) com.	56½	54½	54¾
Goodyear Tire & Rubber pfd (7)	114¾	114¾	114¾
Goodyear Tire & Rubber pr. pfd. (8)	110¾	110¾	110¾
Kelly-Springfield Tire, com.	23½	22	22¼
Kelly-Springfield Tire, 8% pfd.	66¼	66¼	66¼
Keystone Tire & Rubber, com.	½	⅛	½
Lee Rubber & Tire, com.	10⅝	10	10⅜
Miller Rubber, com (2)	31⅝	31	31
Norwalk Tire & Rubber, com.	3	2¾	3
United States Rubber, com.	44¾	43⅞	44
United States Rubber, 1st pfd (8)	93½	92	92¼

Akron Rubber Stock Quotations

July 22, 1927

Company	Bid	Asked
Falls, com.	....	8
Falls, pfd.	....	8
Faultless, com.	42⅜	44
Firestone, com.	136	138
Firestone, 1st pfd.	106½	107
Firestone, 2nd pfd.	103½	104
General, com.	139½	145
General, pfd.	102½	110½
Goodrich, pfd.	97	100
Goodyear, com. V. T. C.	50½	51
Goodyear, pfd. V. T. C.	114½	115½
Goodyear, pr. pfd. V. T. C.	110	111
India, com.	24	25
Miller, com.	31	32
Miller, pfd.	98	99
Mohawk, pfd.	....	40
Rubber Service Laboratories	....	41
Seiberling, com.	28	30
Seiberling, pfd.	....	100
Star, com.	½	2

INDIA MACHINE & RUBBER MOLD CO., AKRON, OHIO, ANNOUNCES a new type of tire building drum designed to increase the efficiency of drum tire building. It is mounted on a self acting chuck, which permits the operation of collapsing and returning the drum to original position to take place in less than a second. Three sections, with two main side sections and a wedge section at the bottom comprise the drum proper. When the key pin at the axis is pulled, the side sections close in with the wedge section remaining stationary. The tire can be easily removed, it is explained.

New Incorporations

BRUSTLIN BROTHERS, INC., May 12 (New Jersey), capital $125,000. Incorporators: Ralph and Martin Brustlin, 105 Ryerson street, Paterson, and Charles Brustlin, Wagaraw Boulevard, Pompton Park, both in New Jersey. Principal office, 54 West Broadway, Paterson, New Jersey. To manufacture tires and tubes.

CLINE RUBBER CO., March 28 (North Carolina), capital $50,000. Incorporators: T. H. Cline, Charlotte; O. B. Carpenter, Kings Mountain, both in North Carolina; N. C. and C. P. Cline, 418 Medical Arts Building, Norfolk, Virginia. Principal office, Charlotte, North Carolina. To deal in tires and accessories.

CUSHION LINK RUBBER MAT CO., INC., May 16 (New York), capital $5,000. Incorporators: Herbert C. Schleicher and Charles Lytle, 250 West 54th street; Gustave Edwards, 128 West 85th street, both in New York City. Principal office, Manhattan, New York. To deal in rubber mats.

CUSTOM-BUILT TIRE CORPORATION OF AMERICA, June 21 (New York), capital $20,000. Incorporators: Max Antkes, 436 West 160th street; Ellis Antkes, 49 West 71st street; Gladys Ansus, 222 West 83rd street, all of New York City. Principal office, Manhattan, New York. To manufacture tires.

ECLIPSE WRAPPING BAND CO., May 13 (Massachusetts), capital $100,000. Incorporators: Albert L. Hasey, 30 Ivory street, West Roxbury; Royal V. Bryant, 66 Royal street, Lowell; H. Adrian Erysin, 102 Main street, Malden, all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture rubber bands.

G-G TIRE CO., June 20 (New Jersey), capital $125,000. Incorporators: Max Gibian; David Freedman; Frank Dunham, all of Perth Amboy, New Jersey. Principal office, 73 Madison avenue, Perth Amboy, New Jersey. To manufacture tires and rubber goods.

GEM RUBBER PRODUCTS CO., INC., June 22 (New York), capital $25,000. Incorporators: Francis Peragine; Beatrice Brown and Solomon W. Kroll, all of 116 Nassau street, New York City. Principal office, Manhattan, New York. To manufacture rubber clothing, etc.

GENERAL TIRE & SUPPLY CO., February 21 (Virginia), capital $10,000. Officers: W. F. Amonette, president; Grasty Crews, vice-president; A. B. Richardson, secretary and treasurer, all of Danville, Virginia. Principal office, Richmond, Virginia. To deal in tires.

GREAT LAKES TIRE CORPORATION, June 23 (New York), capital $50,000. Incorporators: L. W. Baker, Fairlawn; C. R. Bollinger, 1146 Jefferson avenue, Akron, both in Ohio; W. H. Taylor, 87 Delham street, Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

HANCOCK CLOTHING CO., INC., May 19 (Massachusetts), capital $50,000. Officers: Joseph Marotta, president, and Giovina Marotta, director, both of 41 Edward street; Harry Hirschman, treasurer and Mollie Hirschman, clerk, both of 36A Marshall street, all in Medford, Massachusetts. Principal office, Boston, Massachusetts. To manufacture rubber clothing.

MARTIN RUBBER SALES CORPORATION, July 7 (New York), capital $10,000. Incorporators: Lillian Irving; Dorothy McDonald and Flora Nathan, all of 1501 Broadway, New York City. Principal office, Queens County, New York. To operate a general commission business in rubber.

MORRIS NOVELTY CO., INC., May 14 (New York), capital $5,000. Incorporators: Samuel S. Morris and May B. Roberts, 214 Audubon avenue, New York City; Max Heller, 156 South Third street, Brooklyn, New York. Principal office, Manhattan, New York. To deal in rubber products such as hats, etc.

MUNICIPAL TIRE & ACCESSORY STORES, INC., May 4 (New York), capital $10,000. Incorporators: Ethel Levin, 320 East 5th street; Katherine Kravitt, 508 Avenue N, both of Brooklyn; Edna M. Gans, 2693 Morris avenue, Bronx, both in New York. Principal office, Manhattan, New York. To deal in tires.

PACIFIC GOODRICH RUBBER CO., June 28 (Delaware), capital 10,000 shares without nominal or par value. Incorporators: T. L. Croteau; Alfred Jervis; E. B. Stauffer, all of Wilmington, Delaware. Principal office with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture and deal in rubber goods.

PARAMOUNT SALES, INC., May 24 (New Jersey), capital $100,000 preferred stock and 2,000 shares common stock. Incorporators: Fred T. Roberts, 156 Highland avenue; Jack A. Roberts, 116 Summit avenue, both of Montclair; Emanuel Shavrich, 356 East 41st street, Paterson, all in New Jersey. Principal office, Paterson, New Jersey. To manufacture all kinds of rubber toys and balls and to treat raw rubber.

PARKER TIRE CO., April 29 (Wisconsin), capital $15,000. Officers: Dr. S. R. Mitchell, president, 6th & Wisconsin streets; William L. Parker, vice president, and Helen L. Parker, secretary, both of 220 27th street, all of Milwaukee, Wisconsin. Principal office, Milwaukee, Wisconsin. To deal in tires.

SKIDGRIPS, INC., July 11 (Delaware), capital stock 10,500 shares without nominal or par value. Incorporators: William R. Crawford, Jr., Montclair; Robert H. Scholl, Englewood, both in New Jersey; Murray MacElhinney, New York City. Principal office with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture and deal in rubber, gutta percha, etc.

TERMINAL RUBBER & METAL CO., INC., May 10 (New York), capital $15,000. Incorporators: Herbert S. Frankel, 1281 Bergen street; Israel J. Goodman, 1406 East 5th street; Louis J. Gerinsky, 1035 55th street, all of Brooklyn, New York. Principal office, Kings County, New York. To deal in scrap rubber.

THREE STAR RUBBER CO., March 23 (Wisconsin), capital stock 1,000 shares of no par value. Incorporators: Zigmund Stanslowski; Frank Knapinski; Ray Stillwell. Principal office, Milwaukee, Wisconsin. To manufacture and deal in tires, rubber supplies, etc.

TIRE REBUILDING CO., INC., June 14 (New York), capital $10,000. Incorporators: Cyril A. and Flora T. Madden, 2203 Douglas Crescent; Miles W. Jones, 305 Arcade Building, all of Utica, New York. Principal office, Utica, New York. To manufacture tires and tubes.

TULSA RUBBER PRODUCTS CO., May 13 (Oklahoma), capital $25,000. Incorporators: J. A. Frates; O. M. Sewell and R. A. Kleinschmidt, all of Tulsa, Oklahoma. Principal office, Tulsa, Oklahoma. To deal in tires, tubes and rubber goods of all kinds.

WABAN SHOE CO., June 16 (Massachusetts), $75,000. Winnie B. Gosse, president, 53 Lake avenue; Everett H. Borofski, treasurer, 55 Burrill street; Henrietta M. Warde, clerk, 26 Spring street, all of Lynn, Massachusetts. Principal office, Lynn, Massachusetts. To deal in rubber goods of all kinds.

The Rubber Industry in America

Ohio

Following a slight recession in June, sales of automobile tires began to improve early in July, and shipments throughout the month have been heavy. Several Akron rubber manufacturers report that tire sales in July will break all previous records. Dealers' stocks were rapidly depleted under a wave of consumer buying which developed during the midsummer hot weather. Automobile manufacturers also are ordering more tires for original equipment than had been expected at this time.

Stability of the price situation is no small factor in the more prosperous conditions prevailing for the rubber industry. Both manufacturers and dealers appear confident there will be no change in tire prices for some time. Instead of a downward revision, as was feared two months ago, the chances favor higher tire prices later in the year. The crude rubber market has rallied after its recent weakness, and promises to be more stable from now on. Higher cotton and fabric prices have more than made up for the five to six cent drop in rubber prices.

Tire prices have become firmer following the announcement on July 1 that the two largest mail order houses have listed tires and tubes in their new catalogs at prices 5 to 8 per cent higher than quoted for their respective summer sales. These become effective September 1. Several Akron manufacturers gave out statements this month that they contemplated no price revision, either up or down.

The rubber and tire industry achieved new high sales records for the first half year, ended June 30. Shipments of tires totaled more than 32,000,000, compared with only a little over 25,000,000 casings in the first half of 1926. A greater volume of shipments is expected to be made during the last six months of this year.

With a big volume assured, the matter of satisfactory profits must depend upon the ability of manufacturers to reduce overhead by enforcing rigid economy both in production and sales departments. That good progress along this line has been made by the well managed companies is indicated in the reports of the Goodyear, Goodrich and Seiberling rubber companies for the first six months, showing fair net earnings, despite the lower selling price of tires.

Akron factories have been running almost at capacity since the Fourth of July holiday. While automobile tires have been manufactured in a steadily increasing volume, there has also been a good demand for mechanical rubber goods. The B. F. Goodrich Co. has been adding to its working forces in the rubber footwear departments, and large stocks are being moved for the fall trade. A record breaking footwear business is looked for this winter, with the "Zipper" boot again as a leader.

There has been considerable agitation recently among manufacturers and dealers alike regarding the proposed return of consumer retail price lists. Everyone agrees that something should be done to remedy the present chaotic price situation in the retail trade, but opinion is divided on what is the best method to pursue.

The Maumee Valley Rubber Co., Toledo, Ohio, manufacturer of rubber tile flooring, is running on a twenty-four hour basis and is doubling the capacity of its plant. Karl N. Hardee is manager of the company.

James W. Dessecker has resigned as secretary of the Star Rubber Co., to take charge of the accounting, cost and purchasing departments of the newly organized Lambert Tire & Rubber Co., Akron, Ohio.

Mr. Firestone on Cheaper Rubber

Recent press despatches quote Harvey S. Firestone as prophesizing cheaper rubber. Mr. Firestone is credited with the declaration that the world is producing more rubber than it is consuming, and that restriction is proving a boomerang to the British. The story about the discovery of a new system of bud grafting through which the yield of rubber can be increased four-fold, he derided, declaring it to be no new discovery. He is also quoted as predicting that his Liberian plantations would start producing rubber in five years, and prove a strong factor for cheaper rubber.

Three Record Breakers

When Ralph De Palma first began to test the durability of automobiles by racing them over the fastest and most difficult courses in the world, Frank A. Seiberling furnished him with his first set of tires. Since then De Palma and Seiberling have both made many records. Recently, when De Palma called upon Seiberling at Akron, they were joined by John F. Palmer, inventor of the original cord tire principle, and who

Frank A. Seiberling, John F. Palmer and Ralph De Palma.

is now associated with the research department of the Seiberling Rubber Company.

Walter Scheffler, service engineer for the Utility Manufacturing Co., Cudahy, Wisconsin, has taken offices in the Akron Equipment Co. Building, East Exchange street, and will call on the trade in Akron and surrounding territory.

Seiberling Rubber Co., Akron, Ohio, reports sales of $7,298,011 for the six months ended June 30, compared with sales of $6,616,652 in the same period last year. Although tire prices were 30 per cent lower than in 1926, dollar volume for the current half year was nearly 12 per cent greater, and unit sales to dealers led last year's record by 59 per cent. Net earnings, after interest, depreciation and other charges except federal taxes, totaled $826,958. After setting aside $50,000 for contingencies and after preferred dividends, the net available for 196,896 shares of common stock was $776,958, against a profit of $182,235 last year. President F. A. Seiberling states that June sales broke all previous records, and July business has so far been even better, with prospects of being a record month.

General Tire & Rubber Co., Akron, Ohio, has let the contract for three new additions to its Akron plant. All are expected to be ready for operation January 1. One wing, three stories high, will add to the tire department and in-

crease storage facilities for raw materials. Another three-story wing will include an addition to the vulcanizing department. The third addition is to be one-story, saw tooth construction, and will house calender machinery. Capacity of the plant will be increased by nearly 3,000 tires a day, officials estimate.

John H. Diehl, who has been identified as an executive with the Mason Tire & Rubber Co., Akron, Ohio, for the past ten years, has assumed direction of all selling divisions of the company, including branch and dealers' sales, manufacturers' business, etc. Joining Mason in 1917, Mr. Diehl served as sales manager until 1918, when he was elected to the board of directors and made a vice president. Officials state that his experience and ability have been a dominating factor in the growth of the company to its position of eighth in the industry.

The Toledo Auto Fabrics Co., Toledo, Ohio, recently completed an addition to its plant which doubles its capacity. The change was made necessary because of the plans of the company to increase its production by the addition of a full line of battery aprons, hospital sheetings, raincoat material, artificial leather, cable, friction and insulating tape. R. A. Landers is manager and Frank Baker, superintendent.

The National Tire & Rubber Co., East Palestine, Ohio, is now running its plant at capacity, while new machinery has been installed for the purpose of manufacturing 1,200 tires and 2,500 inner tubes daily. C. W. Helman is treasurer.

P. J. Kelly has resigned as advertising manager of the Mason Tire & Rubber Co., Kent, Ohio.

The J. L. Shunk Rubber Co., Akron, Ohio, announces plans for two plant additions, both single story structures. The company specializes in rubber sundries.

The Triangle Tire & Rubber Co., Canton, Ohio, reports a steady increase in sales during each month of the present year, with June leading any previous month in both production and sales at better than 10 per cent. The organization is now maintaining a production of approximately 700 tires daily, as compared with the peak in 1926 of 600 tires daily. M. C. Wyatt is general manager.

Georges Raoul Vlober, foreign representative for the Firestone Tire & Rubber Co., returned recently to Europe, after spending several weeks at the Akron factory. Mr. Vlober looks after export sales in France, Spain, Italy, Switzerland and adjacent countries.

GOODYEAR TIRE & RUBBER CO. ACTIVITIES

English Goodyear Factory

Owing to the duty levied by the British Government on foreign tires, The Goodyear Tire & Rubber Co., Akron, Ohio, will erect a tire factory in England, in fact a plant and seventy acres of land have been acquired at Wolverhampton. The factory is a one-story structure, 1,000 feet long, 75 to 300 feet wide and will have a capacity of 2,000 tires per day. Wolverhampton has a population of 130,000 and is 16 miles from Birmingham, the center of the English industrial district.

The necessary machinery and equipment will be shipped promptly from Akron so that production may commence by the end of the year. A number of Akron engineers and production men are leaving immediately to supervise installation of machinery and to start operations.

This factory will be the sixth tire production unit of the Goodyear company, as the concern already has two factories at Akron, one in Los Angeles, one in Canada, and another under construction in Australia, the latter to commence operating October 1.

Goodyear's New Advertising Manager

Robert S. Wilson, who this year was appointed advertising manager of the Goodyear Tire & Rubber Co., Akron, Ohio, has continued throughout his en-

Robert S. Wilson

tire business career to serve this organization in various capacities.

Born January 4, 1890, Mr. Wilson studied at Princeton University, being graduated in the class of 1910. After teaching for two years at the Lawrenceville Academy, he found employment with the Goodyear company as clerk in the adjusting department at Akron, Ohio.

From 1912 to 1913 he was working at the Detroit branch as an adjuster, while from 1914 to 1917 he was manager of the adjusting department. He was again advanced in 1917 to the position of manager of the truck tire department, where he remained until 1921. In that year he was made manager of the company's western division, serving acceptably in the capacity until the present year when he was promoted to the position he is now holding.

Goodyear Suit Ended

Goodyear Tire & Rubber Co.'s factional litigation officially ended with approval by stockholders at the annual meeting, July 11 and 12, of the company's refinancing program and other features of the settlement previously agreed upon by the management and majority shareholders. Specific proposals ratified were: Increase of directors from fifteen to seventeen and reelection for three years of President P. W. Litchfield. Creation and sale of $60,000,000 worth of 5 per cent first mortgage and collateral trust bonds to mature May 1, 1957. These replace 8 per cent bonds and debentures voted to be retired. Issuance of 1,000,000 shares of new no par preferred stock to be offered in exchange for present $100 par preferred in a ratio of five shares of new for each four of old. This takes care of the $25 in accrued dividends on the 7 per cent preferred stock. An executive committee, consisting of the following, was elected: P. W. Litchfield, Francis Seiberling, E. B. Green, S. L. Smith, John Sherwin, G. A. Thompson and Walter B. Mahoney.

Following the stockholders' action, Common Pleas Judge S. D. Kenfield issued a court order which dismissed all Goodyear suits from the records.

Goodyear Tire & Rubber Co., Akron, Ohio, has been awarded first prize in the United States Navy's competition for the design of an airship of 6,500,000 cubic feet gas capacity. Dr. Karl Arnstein formerly chief engineer of the old Zeppelin Co., of Germany, headed a staff of 15 experts who worked on plans for the craft. It is understood to be almost a certainty that Goodyear will receive the contract for building the ship at an estimated cost of $5,000,000. The craft will be 780 feet long and 135 feet in diameter, being more than twice as large as the Los Angeles.

The Johnson Rubber Co., Middlefield, Ohio, has started the production of mechanical tubing and strip rubber and expects to manufacture a complete line of these goods.

Massachusetts

Rubber Goods Production

With the footwear trade in the midst of the summer closing down period and the hot spell of last month handicapping mills in general, rubber production during July was somewhat less than the previous month in this section. Tire and tube output has continued at peak levels, but other rubber manufacturers who depend upon the automobile industry for business have found things quiet owing to the body and assembly plants being in the process of changing over car models.

Massachusetts state figures for June as compared with May show that employment in rubber footwear decreased from 8,637 to 8,540, with 1,523 being on part time; while in the rubber goods, tires and tubes division employment showed a slight increase from 2,752 to 2,757 of which only 105 were on part time. Average earnings in footwear decreased from $26.84 to $25.63, and in rubber goods from $26.15 to $25.32. The state index of employment in rubber footwear now stands at 96 per cent of normal while rubber goods, tires and tubes stand at 125.6 per cent of normal.

Sears, Roebuck & Co.'s retail auto supply store, 790-792 Commonwealth avenue, Boston, offers two grades of tires, the All-State, guaranteed for 12,000 miles, and the Dearborn guaranteed for 8,000 miles. Prices for balloon sizes on the All State are as follows: 29 by 4.40, $8.45; 29 by 4.75, $10.95; 31 by 4.95, $13.85; 31 by 5.25, $14.45; 33 by 6.00 $18.35. Tubes and straight side sizes are priced correspondingly low and Peerless Ford batteries are offered for $8.19.

The American Rubber Co.'s employes of the East Cambridge factory held their annual outing at the Riverside recreation grounds, Newton, Massachusetts, on June 26. An all-day program of track, field and water sports, dancing, a band concert and a ball game were enjoyed. The committee in charge included: Arthur R. Bagster, chairman; George McCloskey, James F. Ryan, David F. Ahlstrom, E. H. Clark, John L. Walsh, Fred H. Romeky, Cornelius Lynch and A. E. Spears.

The Boston Belting Co.'s final liquidation will leave nothing for the stockholders according to President George F. Willett. He states that the balance sheet December 31, 1926, showed total assets of $1,000, consisting of cash and stock in the United States Worsted Co., liabilities are about $210,000, among which was a debt to a Boston bank for interest of $4,500, $750 for taxes, $5,000 for accounting expenses, $60,000 in notes payable and $139,000 due George F. Willett. Replying to a stockholder's inquiry, Mr. Willett stated that the company's real estate and equipment in Roxbury was sold last year to satisfy obligations, while the equity in the building on Franklin street was sold at a mortgagee's sale. Referring to his own and Edmund H. Sear's personal guarantees of the 6 per cent annual dividend on the $500,000 preferred stock, Willett said he had practically no resources and could not meet his obligations. The Boston Belting Co. was the oldest rubber company in America dating its founding back to 1812. For years it prospered under the Forsyth family management, and was acquired by Willett in 1917.

The Salmon Falls Manufacturing Co., tire fabric mill in liquidation, has been sold to the New England Public Service Co., controlled by the Insull interests, for $500,000. Purchase included the company's interest in the Salmon Falls Power Co. With this transaction completed, the winding up of the company's affairs is practically complete and stockholder's equity is said to be in the neighborhood of $40 a share.

Connecticut Mills, tire fabric mills at Danielson, Connecticut, Taunton and Fall River, Massachusetts, has completed its new Alabama plant a month earlier than anticipated. About 13,000 spindles are in operation, and by fall the full complement of 33,000 spindles will be at work. The Fall River plant is now completely closed down, and it is probable that these two plants, with the Taunton plant will be disposed of in the near future. Obadiah Butler is president, and Victor A. Anderson, formerly with the Beacon Falls Rubber Shoe Co., is treasurer.

Oscar Widder of Bradford, Massachusetts, and his brother, Paul Widder, of Arlington, will build a factory in Skowhegan, Maine, and employ 200 persons in the manufacture of men's and women's novelty shoes.

The Hudson Shoe Co., Hudson, Massachusetts, which recently bought the Logan shoe factory on South street, commenced operations on July 18 with 400 employes. Harry Adler is president.

R. A. Blanchard, factory manager of the mixing and reclaiming division at the Hood Rubber Co., has supervision of the tire and tube department of that company. R. A. Muir, factory manager of tires and tubes, is in charge of plant scheduling of orders and planning. Blanchard has been with the Hood company since the close of the war and is a M. I. T. man, Class of 1917. He resides at Malden, Massachusetts.

The Aqua Rubber Co., Roxbury, Massachusetts, research chemists and manufacturers of dispersed rubber, cements, and solvents, announces the following officers: John A. Stephens, Jr., president; Charles A. Andrews, treasurer and clerk; directors, the above and Harry H. Beckwith.

The Alfred Hale Rubber Co., Atlantic, Massachusetts, is doing a good volume of business on its various specialties including Rajah crepe soles, white oxford sport shoes, and rubber mixer aprons. Statement of financial condition, recently filed with the Commonwealth of Massachusetts, is as follows:

ASSETS

Real Estate	$30,514.48
Machinery	44,916.32
Merchandise	42,673.75
Fixtures	1,164.93
Accounts Receivable	21,285.03
Cash	13,639.27
Deferred	894.05
	$155,087.83

LIABILITIES

Accounts Payable	$11,695.82
Notes Payable	20,000.00
Reserves	750.00
Surplus	11,357.99
2,000 Shares No Par Common	111,284.02
	$155,087.83

Officers are: David A. Cutler, president and treasurer, Wollaston; William H. Cook, clerk, Boston. Directors: the above and A. L. O'Shea, New York; Charles F. Robbins, New York; John F. Morrill, Boston.

The Boston Insulated Wire & Cable Co., Dorchester, Massachusetts, is among the old established insulated wire manufacturers of this section. The following report was recently filed with the state:

ASSETS

Real Estate	$94,027.47
Machinery	77,469.12
Notes Receivable	17,125.00
Merchandise	132,699.55
Accounts Receivable	51,976.59
Cash	10,254.85
Securities	225,888.44
Good Will	87,000.00
	$696,441.02

LIABILITIES

Common Stock	$94,000.00
Accounts Payable	16,106.00
Surplus	586,335.02
	$696,441.02

Officers of the corporation are: Harry B. Burley, president and treasurer, Brookline; Benjamin T. Burley, clerk, Worcester. Directors, the above, and Henry E. Rooney, Dorchester.

George E. Hall, president and general manager of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, and Mrs. Hall recently left for a European trip. They sailed from Boston, July 10, on the *S. S. Laconia.*

Appleton Resumes

The Appleton Rubber Co., Franklin, Massachusetts, has been rebuilding its plant which was damaged by fire a few months ago, and is now again engaged in the manufacture of electrical, friction and rubber tapes. The company has spared no expense in its attempts to reconstruct its factory as one of the most modern of its kind, and special machinery for the production of electrical tape has been designed and installed. A new building is also being erected for the company's reclaim department, while new equipment is to be put in place in order that operations in this division can begin during the early part of August.

The following executives were recently elected at a meeting of the stockholders: H. O. Phillips, president; J. E. Cameron, treasurer and general manager; Paul O. Lawton, secretary and assistant treasurer; and Robert Cowen, factory manager.

Edwin H. Marble and **Charles F. Marble**, president and treasurer respectively of the Curtis & Marble Machine Co., Worcester, Massachusetts, are, with their families, combining business and pleasure in a trip this summer through Europe.

The Acushnet Process Co., New Bedford, Massachusetts, is specializing in the manufacture of molded goods, and 'Xtra-Wear" products for the drug and hospital trades. The organization is now putting on the market an interesting line of toy boats with hard rubber keels, as well as still other designs for small bathtub boats, the latter being made of soft rubber. Still another product is the "O-Katy" rubber golf tee. P. E. Young is president of the Acushnet company.

The Taunton Rubber Co., Taunton, Massachusetts, is manufacturing rubber heels under the trade name of Columbia, Tauko and Peerless, while it is also turning out a general line of molded goods. The organization's balance sheet as of January 1, 1927, gives current and working assets as totaling $268,869.22 and fixed assets at $48,397.64, or a total of $317,649.80. Herbert O. Phillips has succeeded William L. Gifford as president of the company, while A. G. McKinnon, formerly connected with the Tyer Rubber Co., is factory manager.

Exhibition of Rubber

An interesting exhibition showing rubber in its various stages, from the seed to the finished commercial product, was recently held in the lounge of the Rubber Exchange of New York, 31 South William street, New York, N. Y. The specimens on display were sent by the Rubber Research Institute of Malaya to F. R. Henderson, president of the exchange.

Pennsylvania

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, which manufactures inner tubes under the Fairchild patents, reports a steady increase in business with the factory operating at capacity. C. H. Moomey is in charge of operation.

Lee Rubber & Tire Corp., Conshohocken, Pennsylvania, continues to operate at top capacity on tires with no indication of business falling off. W. W. Benner is factory manager.

The Hydro-United Tire Co., Pottstown, Pennsylvania, is now manufacturing the Dickinson Cord tire under the personal supervision of F. S. Dickinson, inventor of the process.

The Vulcanized Rubber Co., Morrisville, Pennsylvania, continues to operate at shorter working hours. The concern is the oldest hard rubber manufacturing company in this section.

Pennsylvania Rubber Co.

The Pennsylvania Rubber Co. of America, Inc., Jeannette, Pennsylvania, has set, for 1928, a definite sales quota of $25,000,000. It is certain that the company will have no trouble in reaching, if not exceeding, this mark as it plans extensive advertising activities and many changes in policy in support of the dealer. The big factories at Jeannette have a productive capacity of 7,500 tires and 12,000 tubes per day, and with minor changes, this capacity can be materially enlarged.

Ray A. Likely, formerly associated with the Mason Tire & Rubber Co., Kent, Ohio, has been appointed assistant auditor of the Pennsylvania Rubber Co., Jeannette, Pennsylvania. He is well known in the industrial field as a cost accountant and systematizer, and during the past sixteen years has been identified with various industries, including eight years in rubber manufacturing.

R. A. Likely

Dudley M. Mason was elected to the Board of Directors of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, at the annual stockholders' meeting. The directors subsequently elected Mr. Mason general manager of the company. This action signalized the return to the rubber industry of one who for years was one of its prominent figures. In 1916, Mr. Mason organized the Mason Tire & Rubber Co., Kent, Ohio, serving as its general manager until 1924, when he resigned owing to ill health. Since that time he has been residing in southern California.

D. M. Mason

H. W. Butterworth & Sons Co. Hold Election

At the regular meeting of the officers of the H. W. Butterworth & Sons Co., Philadelphia, Pennsylvania, Harry W. Butterworth, Sr., former president and active head, was made chairman of the Board of Directors; A. W. Butterworth, president and treasurer; J. Ebert Butterworth, vice president in charge of the southern office located at Charlotte, North Carolina; Harry W. Butterworth, Jr., was also elected a vice president; DeHaven Butterworth, was made secretary; and James W. Butterworth, 2nd, continued as assistant treasurer. The only other office remaining unchanged was that of vice president, in charge of the New England office. A. C. Freeman was elected to this office several years ago, and has since held it.

New Jersey

There has been a decided improvement in all lines of the rubber industry, with the exception of hard rubber, during the past month. Tire and tube manufacturing concerns report an increase in orders and additional working hours. The mechanical rubber output, especially belting, packing and hose, is reported to be greater than last month. Weather conditions have helped in the manufacture of tires. The demand for rubber shoes has increased because of the athletic activities. Heels and soles are selling in good volume. The hard rubber situation, however, has not shown any signs of improvement during the month.

The Combination Rubber Co., Trenton, New Jersey, is running to capacity on tires and tubes with good prospects for the remainder of the summer.

William W. McMahan, vice president and general manager of the Ajax Rubber Co., Trenton, New Jersey, will leave shortly for a business trip through the west.

The Thermoid Rubber Co., Trenton, New Jersey, reports good business in all departments.

The Luzerne Rubber Co., Trenton, New Jersey, announces that there has been no increase in business for the past month.

The Essex Rubber Co., Trenton, New Jersey, is operating twenty-four hours a day in some of the departments. The company's business has greatly increased during the past month. The demand for rubber athletic shoes is particularly heavy.

The Michelin Tire Co., Milltown, New Jersey, announces the transfer of E. H. Swingler from the New York territory to the Lynchburg district, replacing D. M. Bell who has been sent to the Charlotte district. E. J. Fitzgibbon is now in charge of the St. Louis and Indianapolis districts.

Dural Rubber Corp., Flemington, New Jersey, has about reached capacity on inner tubes and molded articles and plans are under way to increase the capacity of the plant. William E. Ehrenfeld is president and factory manager.

The Michelin Tire Co., Milltown, New Jersey, is running to capacity on tires and tubes. R. Milton, superintendent, has returned from a two weeks' vacation.

Murray Rubber Co., Trenton, New Jersey, reports a very satisfactory increase of business in tire and tube production over last month. William Dolton is factory manager and M. J. Rich is chief engineer.

Mr. and Mrs. Clifford H. Oakley and family are sojourning at Buck Hill Falls, in the Pocono Mountains. Mr. Oakley is president of the Essex Rubber Co., Trenton, New Jersey.

The Paramount Rubber Co., 550 East 38th street, Paterson, New Jersey, plans to begin work at an early date on an addition to its plant at Vreeland avenue and Market street, the reported cost of which, with equipment, is estimated at $25,000. The Paramount company, of which Fred T. Roberts is president, manufactures hollow rubber specialties, athletic rubber goods, etc.

New York

E. M. & F. Waldo, Inc., has removed its New York office from 11 Broadway to 244 Fifth avenue.

William H. Stiles, formerly associated with Schmoll, Stiles, Reid, Inc., crude rubber brokers, began on July 1 to carry on business under his own name, with offices at 44 Beaver street, New York, N. Y.

The Keystone Tire & Rubber Co., New York, N. Y., has decided to sell its assets, consisting mainly of the company's investment in the Gryphon Rubber & Tire Corp.

E. M. McColm recently joined the staff of the United States Rubber Co., of New York, N. Y., as research chemist. Mr. McColm will be located for the next three years at the company's plantation in Sumatra, Dutch East Indies, for which point he expects to sail shortly from the west coast.

International Acceptance Bank, Inc., Directors

David F. Houston was elected a director of the International Acceptance Bank, Inc., at the last regular meeting of the board, succeeding the late John T. Pratt. Mr. Houston, who was Secretary of Agriculture and later Secretary of the Treasury during the Wilson Administration, was recently elected president of the Mutual Life Insurance Co. of New York, and is also vice president of the American Telephone & Telegraph Co. and president of the Bell Telephone Securities Corp.

The complete list of directors of the International Acceptance Bank, including Mr. Houston, follows: Paul M. Warburg, chairman, Daniel G. Wing, vice chairman; Matthew C. Brush, Newcomb Carlton, Walter E. Frew, F. Abbot Goodhue, Robert F. Herrick, David F. Houston, L. Nachmann, George S. Patterson, Charles B. Seger, Lawrence H. Shearman, William Skinner, Philip Stockton, Charles A. Stone, Henry Tatnall, Felix M. Warburg and Thomas H. West, Jr.

The Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois, reports that L. N. Einsel has been appointed the company's branch manager at Buffalo, New York.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, is being represented in the Buffalo and western New York district by Bert Mullett, while S. M. Mekkelsen will cover New Hampshire and Maine.

Tucker Rubber Corp.

The amount realized from the recent sale of the machinery and equipment of the Tucker Rubber Corp., Buffalo, New York, aggregated $32,584.61, about 10 per cent of its value. The price received for small machines and merchandise averaged up fairly well, the big loss being in the large machines such as calenders, hose making machines, vulcanizers, etc.

An early distribution to the creditors of the Tucker corporation, whose claims amount to well over $500,000, does not seem at all likely as preferences amounting to $43,618 have been asked by the United States Rubber Reclaiming Co. The latter company bases its claim to ownership of about two-thirds of the machinery sold as landlord of the plant occupied by the Tucker company. The court, however, confirmed the sale and directed the funds to be impounded until the legality of the claims of the United States Rubber Reclaiming Co. was judicially determined.

Rubber and Balata Belting

During the past three years the exports of rubber and balata belting from the principal manufacturing countries have reached, according to the Department of Commerce, the following total amounts: 1924, 8,661,000 pounds; 1925, 9,717,000 pounds, and 1926, 9,709,000 pounds. To this total the United States contributed in 1926 4,176,000 pounds, the share of the United Kingdom being 2,658,000 pounds, and that of Canada, 1,149,000 pounds. Other manufacturing countries were in the following order: Germany, Belgium, Czechoslovakia, and Norway.

Rhode Island

The National India Rubber Co. resumed operations at the Bristol, Rhode Island, plant on August 1, following the usual summer shutdown. There was a material curtailment in production with a corresponding decrease in the working forces, which the management states, is usual at this period of the year. While the management expresses a hope that the fabric footwear situation might improve later in the fall, no definite statement could be made. The Keds Division closed on July 8 for three weeks and some 300 employes were notified that their services would not be required immediately. This lay off however, it was stated, did not affect those operatives who have been continuously employed by the company for a period of ten years or more. The wire division closed July 15 for two weeks and in this department nearly 350 additional employes are temporarily laid off.

The Atlantic Tubing Co. is not contemplating erecting any additional buildings for the expansion of its plant at 1796 Cranston street, Cranston, Rhode Island, according to a statement authorized by the officials following the filing of an amendment to the company's charter with the Secretary of State, whereby the capital stock of $100,000 was increased to $250,000. The corporators and officers of the concern are as follows: Philip Weinstein, president and treasurer; William F. Weinstein, vice president and assistant treasurer; Harold A. Weinstein, secretary.

The Columbia Narrow Fabric Co., Shannock, Rhode Island, has just completed the erection of a concrete garage with concrete driveways for the housing of the new 70-gallon Ford fire truck that the company recently purchased.

The Ross Wire Co., 69 Bath street, Providence, Rhode Island, formerly specializing in the production of bare and fabric covered wires and cords, has added a line of rubber covered cords for the electrical and radio trades.

William McKechnie has been appointed chief inspector of the Keds Division at the factory of the National India Rubber Co., Bristol, Rhode Island.

C. C. Rubber Co., 121 Benefit street, Woonsocket, Rhode Island, has filed a statement at the office of the Secretary of State, announcing a change in the corporate name to the Pilgrim Rubber Corporation.

E. A. Currier, Jr., of the industrial relations department of the National India Rubber Co., Bristol, Rhode Island, who underwent an operation at the Jane Brown Hospital in Providence recently, is slowly recuperating but it will be some time before he resumes his duties at the factory.

Tubular Woven Fabric Co., Pawtucket, Rhode Island, is making extensive alterations and improvements which include the erection of three additions to the plant. One is to be one story, 80 by 100 feet, to cost $20,000. There will also be two two-story additions, one 38 by 120 feet and the other 54 by 82 feet. Work has already been commenced on these extensions and will be pushed so as to be ready for operation early in the fall.

North Providence Town Council has recently purchased 1,600 feet of fire hose for the fire companies at a total cost of $2,035. Of the amount ordered the Combination Ladder Co., Providence, supplied 1,200 feet at $1.25 per foot; the Hope Rubber Co., 300 feet at $1.20 and the Eureka Co., 100 feet at $1.75.

The Henry L. Scott Co., Blackstone and Culver streets, Providence, Rhode Island, specializing in testing apparatus as used by the rubber and textile industries, has recently completed a new building, adjoining the old quarters, which has increased the plant floor space by about 140 per cent. Executives of the organization include: Henry L. Scott, president; and David C. Scott, treasurer.

Rubber Raft Saves Crew of the America

It is interesting to note that to rubber Commander Byrd and his three gallant companions owe their safety, for a little rubber life boat was the means of reaching land when the America became submerged after its epic flight. In anticipation of such an emergency, the raft had been stored away in the plane, and it was the work of a moment for Lieutenant Noville to inflate and make ready the small boat and row with the crew to the beach of the village of Ver-sur-Mer.

These rubber rafts are now a part of the equipment of most planes attempting long distance flights, and were used in the majority of recent attempts over the Atlantic and Pacific.

Phillips-Baker Succeeds Bourn

The Phillips-Baker Rubber Co., 58 Warren street, Providence, Rhode Island, has succeeded the Bourn Rubber Co. in the production of a general line of waterproof and canvas footwear. The plant and business of the Bourn organization, a well-known concern established in 1840, was purchased in August, 1925, by the present company, at which time the trade name of Bourn Rubber Manufacturing Co. was adopted. The change at this time of the company's name does not involve any difference in policy or organization, but has been made for the purpose of more definitely establishing in the minds of the industry the policies established since the reorganization in 1925.

Executives of the new company include: V. B. Phillips, president and treasurer; Charles H. Baker, vice president; E. A. Leisch, assistant treasurer; S. W. Bourn, secretary; E. J. Dempsey, factory manager; H. F. Lincoln, manager of eastern sales; A. J. Davis, purchasing agent; H. Norgaard, auditor.

Texas Plant for Godfrey L. Cabot, Inc.

Work is being started this month on what promises to be one of the largest carbon plants in the world, to be located in the Texas Panhandle near the town of Skelly in Carson County. The plant will be of a new type of construction developed by the Cabot engineers in a small experimental plant at Eliasville, Texas, and it is expected that the innovations will permit a considerable saving in the cost of operation and will turn out a finer and more uniform product.

A permit has been granted by the Texas Railroad Commission allowing for the use of 50,000,000 cubic feet of gas each day, from which the company expects to make 75,000 pounds of carbon black daily as soon as market conditions justify so large an addition to its production. The Godfrey company has recently completed in eastern Texas two plants which are at present producing 30,000 pounds of carbon black daily.

The New Process Carbon Black Co., with general offices and plant at Monroe, Louisiana, has received a permit to do business in Texas, and expects within a few years, to manufacture by a new patented process, 50,000 to 70,000 pounds of carbon black daily. The company, which is capitalized at $1,500,000, is owned and operated by the stockholders of the United Oil & Natural Gas Products Corp. and Consolidated Carbon Corp.

The Shelby Service Station, Shelby, Mississippi, handles Cooper tires and batteries exclusively. J. Latilias is proprietor.

Pacific Coast

Samson Tire & Rubber Co., according to President Adolf Schleicher, is adding machinery and making extensions to its plant in Compton, California, that will mean an outlay of at least $100,000 before the end of the year. The factory has been working night and day for four years, and is now running three shifts. Samson has just ended the best six months in its history and is confident that it will go over the top in carrying out its shop slogan, "1927 must equal 1925 and 1926 combined."

United States Rubber Co., according to Pacific Coast Manager J. B. Brady, of San Francisco, who spent much time in July visiting territory covered by the northwest branches, is much gratified with results for the first half of the year, the volume of business being considerably in excess of that obtained in the fore part of 1926.

American Rubber Manufacturing Co., it is stated by Vice President George B. Dodge, has recently remodeled a large part of its mills at Park avenue and Watt street, Oakland, California, and added a washer, tuber and two calenders. The heavy belting department is working on two shifts and the demand for fire hose and mechanicals is taxing the mills' capacity. President N. S. Dodge has been spending several weeks in New York looking after additional equipment. Martin Kearns, milling expert, has, after twenty years' service, been taking a vacation. W. R. Goudie, former Denver manager for the Republic Rubber Co., has been appointed southwestern sales manager.

Chanslor & Lyon Co., one of the largest dealers in automotive supplies on the Pacific Coast, and which makes its own tires and tubes in Oakland, California, has taken on the making and sale of rubber storage batteries. Its battery factory in San Francisco is in charge of A. D. Nichols, former executive of the Weinstein-Nichols automotive supply firm.

Pacific Coast Mechanical Rubber Men's Golf Tournament, an annual affair that is much enjoyed, will be held a little later than usual this year, October 3 and 4, at the Rancho Golf Club, Culver City, California, adjacent to Los Angeles. W. A. Corder, president of the Los Angeles Rubber Co., is head of the committee in charge and has secured eighteen fine trophies.

Paragon Rubber Corp., 4827 Huntington drive, Los Angeles, California, which has been quiescent for several months, will probably be soon reorganized and a different line of products turned out, according to P. F. Cogswell, of El Monte, California, who, with Secretary B. Norcross, has been making the new arrangements. The concern had been operating since March, 1923, its line including oil well supplies, general mechanicals and tire repair materials.

Angelus Heel & Rubber Co., 1417 North Main street, Los Angeles, California, which had suspended operations for over two years, has resumed business, disregarding shoe dealers' supplies and confining itself to making a special line of tire repair materials. W. E. McCarty is president, J. M. Kennedy, secretary, and E. J. Nagle, vice president. While business was suspended the factory was used by the Huntington Rubber Co., pioneer tire dealers and repairers, until the latter's new works at 857 North Broadway were rearranged.

Feather-like Pneumatic Products Co., 5911 South Broadway, Los Angeles, California, of which Arthur A. Leltic is manager, is very busy on United States Navy orders. Its products include many kinds of inflatable rubber goods, including pillows, cushions, mattresses, balloons, life preservers, airplane and moving picture specialties.

California Rubber Products Co., 257 South Spring street, Los Angeles, California, of which John Rankin is owner and C. M. Smith general manager, states that it is the only concern in the country manufacturing undertakers' protective blankets. The latter are made of double-coated army duck, steam-cured, and have unique fasteners. The blankets are used chiefly for emergency cases. The company's other products are lightweight aprons for laboratory and beauty parlor use.

Sherbondy Rubber Co., Norwalk, California, has begun the manufacture of a non-leak imperforable inner tube, invented by the president of the company, Edward L. Sherbondy, and also a superior grade of reclaim rubber. W. H. Booth is vice president; Howard Sherbondy, secretary-treasurer, and associated with them are George A. Ledoux and Dr. J. A. Ledoux. The executive office is in the Board of Trade building, Los Angeles, California

Eno Rubber Corp., Torrance, California, according to President Roy R. Musser, is working overtime in all departments on heavy rush orders. Oil field supplies and general mechanicals form a large part of the products, with many specialties. Some recent additions to the latter are a chemically-heated foot warmer, a water-ballasted decoy duck and a rubber and fabric horseshoe.

F. C. Flickenger, who has been in charge of the Firestone branch in San Francisco, has been placed in charge of the Firestone Sacramento branch at 1320-22 J street.

California Wire & Cable Co., which operates factories at Orange and Oakland, denies a report circulated among the trade that it has been planning to manufacture rubber-covered wire. According to Office Manager R. C. Edwards at the Orange plant, nothing can be stated as to when such a product will be turned out, if ever, and that the entire output is weatherproof wire in which no rubber is used.

Michelin Tire Co. products will be distributed in the southwest solely by the Reilly Rubber Co., headed by J. R. Reilly, a veteran rubber manufacturer, in a fine building which he has just erected at 1361 South Hope street, Los Angeles, California. The establishment, said to be one of the most unique and attractive of its kind in the country, was opened with a notable celebration July 9.

The Gates Rubber Co., Denver, Colorado, according to F. H. Nassimbene, export manager, showed an increase of 115 per cent in export sales for the first half of 1927. Gates Vulco fan belts, radiator hose and other products of the Vulco line, are now distributed in a total of 52 foreign countries.

The company is holding a contest for their Vulco tire jobber salesmen, the prizes being free trips to the plant at Denver. The contest began July 5 and will end September 3.

Dunlop Tire & Rubber Co., Buffalo, New York, is making considerable progress in marketing tires, tubes and golf balls in the southwest, according to Earl V. Carlson, manager of the factory branch at 1851 Industrial street, Los Angeles, California. The branch has been but a few months at the present location and carries an exceptionally heavy stock.

The B. F. Goodrich Rubber Co., Akron, Ohio, has awarded to the Foundation Company of America the main contract for the construction of the first unit of the new Goodrich Pacific Coast factory to be erected in the east side of Los Angeles, California. The mission style of architecture, modified to the plant's needs, will be used throughout, and to insure artistic as well as practical effects, Carl J. Weyl, consulting architect, of Los Angeles, is in New York going over the plans. S. B. Robertson, Goodrich director of engineering, has left Akron for the southwest to supervise the final plans

and award contracts for structural steel and other materials, the contracts to be given wherever possible to local concerns. One well has been sunk 600 feet and another is being drilled, the spurs of track to the Union Pacific Railroad have been laid out, and active building operations are scheduled to begin in the middle of August.

Goodyear Tire & Rubber Co. has lately been averaging 7,000 tires and 6,500 tubes a day at its Los Angeles factory. It has decided to use a large portion of its recently-completed mill addition as a branch of the main Los Angeles warehouse, such a depot serving as a convenience for numerous dealers in nearby towns and from which shipments can be made directly, saving much time and rehandling of stock hitherto obtainable only at a point several miles distant from the factory. General Sales Manager J. K. Hough and Sales Promotion Manager E. L. Falls have just returned from a business trip in the northwest. J. B. Winstanley, former branch manager at Denver, has been added to the sales manager's staff in Los Angeles. W. H. Vining, of El Paso, Texas, will take Mr. Winstanley's place and C. A. Brown has been made manager in charge of the branch at El Paso.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, announces that C. S. Payne is now the organization's representative in northern California.

The Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois, reports that J. J. Pie, formerly associated with the Mohawk organization, has been appointed Pacific Coast district manager with headquarters in Los Angeles, replacing J. L. Wathür, who will work from the factory as special representative. C. P. Stearns has also been made southeastern district manager, with headquarters at Atlanta, Georgia.

Midwest

The Ajax Rubber Co., Taylor avenue, Racine, Wisconsin, has begun work on the construction of a five-story and basement addition to its plant. The cost of building, with equipment, is said to be in the neighborhood of $130,000.

John H. Crary, general sales manager of The Gates Rubber Co., Denver, Colorado, is visiting the company's branches at Chicago, Omaha and Kansas City. While in this territory, he will confer with Gates district managers and missionary men.

John G. Gates, secretary and factory superintendent of The Gates Rubber Co., Denver, Colorado, has just returned to the plant after a brief trip to Detroit, Akron, Dayton and other Eastern points.

The Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois, announces the opening of the following branches and changes in personnel. A new branch has been established at Columbus, Ohio, with H. J. Wihl as branch manager; Frederick J. Sebbes has been appointed branch manager at Sprinfield, Illinois; N. B. Hicks has been made southwestern district manager, with headquarters at Dallas, Texas, replacing J. E. Breon who has been transferred in charge of a new branch opened in Kansas City.

The Overland Trail Rubber Co., Omaha, Nebraska, announces the appointment of H. H. Evans as factory manager in charge of production. Mr. Evans' twenty-two years of service in the tire industry has included important assignments in the manufacturing departments of Goodyear, Goodrich and Miller, and for the past several years he has been in charge of production for the Corduroy Tire Co., Grand Rapids, Michigan. The Overland company reports a heavy and increasing demand for Pioneer cord tires with a steadily widening distribution through jobbing and dealer outlets.

H. H. Evans

The Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois, has appointed R. C. Stubbins as northwestern branch manager, with headquarters at Minneapolis, Minnesota. F. S. Crawford is now branch manager at Detroit, Michigan, succeeding Jean Mandeloff.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, reports that Philstrom's Tire Service, Duluth, Minnesota, is now handling the Norwalk line of tires, and plans to extend its already large business. J. C. Winslow is to cover the Detroit district as a representative of the Norwalk organization.

Firestone Los Angeles Works

The Firestone Tire & Rubber Co., Akron, Ohio, is following Goodyear and Goodrich to Los Angeles. It recently took an option there on a forty-acre site at Alameda street, Manchester and Santa Fe avenues and plans to erect practically a replica of the Akron plant at a cost of about $7,000,000. President Harvey S. Firestone was due to reach Los Angeles before August 1 to close the deal, which is said to involve an outlay of $320,000 for the land.

The site is but a short distance southeast of the big Goodyear works. On one side is the Southern Pacific Railroad and on another is the trucking boulevard to the harbor at San Pedro, fifteen miles distant, thus affording exceptional facilities for bringing in raw rubber and other materials and for shipping finished products. The factory location was primarily selected by C. S. Myers, for eighteen years director of engineering for the Firestone company, and who did much to further the 1,000,000-acre Liberia plantation enterprise. He had previously considered possible sites in New Orleans, Houston, Galveston, and Oakland.

It is understood that the Firestone company has virtually contracted to produce at least 5,000 tires a day at the projected plant and to employ 2,500 people. The first unit as planned is a four-story building covering a square 450x450 feet. Ultimately, it is said, the company may make all its tires and tubes at the Los Angeles plant, using the 57-acre Akron plant for other products; and it said to be also probable that the company will route all its rubber (of which it brought $25,000,000 worth from Singapore last year) through the port of Los Angeles.

The United States Rubber Co. and the Fisk Tire & Rubber Co. are also reported to be prospecting for sites for branch factories in the metropolis of the Southwest, but negotiations have not yet reached a definite stage in either case.

Canada

The rubber industry in Canada has been unusually active in the past few months. Good sales of motor cars, and the ever-growing traffic has made the tire business larger than ever before. Footwear business is at least normal, while mechanical goods have also been in good demand due to the general industrial activity. Employment in the industry has increased steadily and in June of this year was nearly 100 per cent of the volume of employment at the beginning of 1920, which is regarded as the boom period. The employment index touched a low of 56 in August, 1921, and it was not until the beginning of 1925 that the real recovery got under way. It is interesting to note that Canada's exports of rubber goods just about balance imports of crude and manufactured rubber.

Wholesalers report practically no business in garden hose, the recent rainy periods have killed the normal demand to a large extent. Rubber fruit jar rings have been reduced substantially in this market averaging 10 per cent or more. The trade in athletic footwear is quite as good as last year and golf shoes, particularly, are selling in larger volume than formerly. This is due to an increasing devotion to golf. There is also a good demand for other outdoor lines.

Canadian Goodrich Co., Ltd., Kitchener, Ont., has recently announced a combination low and high overshoe named Lo-N-Hi Zipper, made on the Fit-all last which adjusts itself to many different shapes of shoes. This new model is a high Zipper which can be quickly and easily converted into a low overshoe with a smart colored cuff.

C. H. Carlisle, president and general manager Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, states that although the recent duty imposed by Britain on tires gives the Canadian manufacturer preference over the American it also gives British tire manufacturers a substantial preference against the Canadian manufacturer.

As far as his company is concerned, says Mr. Carlisle, it will not be affected adversely as it is doing business, at the present time, in eighty-seven different countries and has more orders than it has plant capacity.

Paramount Rubber Consolidated (Canada) Ltd. Prudential Trust Co., Ltd., is liquidating the real estate of this insolvent company which includes land and buildings on Wellington Street South, Sherbrooke, Quebec.

G. S. Whitby, well known as an authority on the preparation and testing of crude rubber and for his researches in its chemistry, has been elected president of the Canadian Institute of Chemistry for 1927-8.

Goodyear Tire & Rubber Co. of Canada, Ltd., has formed a new British company to manufacture tires in England, as a result of the British import duty placed on tires. The Goodyear company's tires for the British market were formerly imported from Canada or the United States.

The Northern Rubber Co., Ltd., Guelph, Ontario, has increased the number of its directors from five to seven.

The Dunlop Tire & Rubber Goods Co., Ltd., Toronto, will present silver inkstands to the winners of provincial amateur golf tournaments in Canada, and solid gold medals to the winners of the Canadian and Western Canada professional championships. Also a golf ball paper weight trophy to any player making a "Hole-in-one" with a Dunlop golf ball.

Canada Golf Ball Co., Ltd., Toronto, is now installed in new premises at 241 Dovercourt Road. The new factory embodies many new features designed to facilitate the manufacture of the well-known golf balls manufactured by this company.

J. C. Haartz Co., New Haven, Connecticut, manufacturer of Duro Gloss rubber raincoat fabric, has given the following Canadian manufacturers rights to use their product: Samit Rubber Co., Ltd.; National Rubber Co. of Canada, Montreal; T. Eaton Co., Ltd., Toronto.

C. H. Carlisle, president and general manager of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, has been elected a director on the board of the Astoria-Rouyn Mines Ltd., succeeding the late Sir John Willison.

Seiberling Rubber Co. of Canada, Ltd., Toronto, reports that work has already been started on the new druggists' sundries building which will be separate from the tire factory. The original tire factory has been completely reorganized and the latest and most modern equipment installed throughout. W. J. Bailey, sales manager, reports a splendid reception from dealers all over the dominion for his firm's product. Warehouse branches have been opened at London, Ontario, and C. A. Munro, Ltd., St. John, New Brunswick, has been appointed distributer for the Maritime Provinces. Shipments are now being made of Seiberling tires to all Canadian points.

Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario, has been holding a series of dealer educational meetings to give their dealers a better knowledge of tires.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, was very much to the front during the recent professional tournament of British Golf Pros vs. Candian Golf Pros, 72-hole match, in which the Dunlop Maxfli golf ball secured first and second place and tied for third place. The Toronto course record was also broken with a Dunlop Maxfli ball.

Ames Holden McCready Rubber Co., Ltd., Montreal, is now represented in Eastern Ontario by Frank Carton, a popular shoe salesman, with a wide acquaintance in the trade, who has succeeded L. Kraft, the latter having recently resigned.

British Columbia Tire Committee of the Greater Vancouver Branch of the Retail Merchants' Association, of which A. R. Higgins is chairman, has carried on all negotiations between the Rubber Manufacturers' Association and the tire dealers in this province during the past year, but as this committee represented only Vancouver, Victoria, and the Fraser Valley District, it is felt that a body more representative of the province of British Columbia as a whole should be formed.

Denby Bros., Vancouver, British Columbia, who control the British Columbia agency for Goodyear Wingfoot rubber heels, have removed to larger premises at 163 Pender Street West.

Climax Rubber Co., Regina, has registered as doing business in Montreal in small-wares etc., with Jack Simon as manager.

Canadian Goodrich Co., Ltd., has more than doubled office and warehouse space in Montreal by the recent removal to Latour street, corner of St. Genevieve.

The McFarland Shoe Co., Edmonton, Alta., has opened a branch warehouse in Saskatoon carrying a complete line of Columbus rubber footwear.

The Gutta Percha & Rubber, Ltd., 47 Yonge street, Toronto, Canada, announces the election of J. Herbert Coffey, Jr., as managing director of the company, effective July 1, 1927. Mr. Coffey has been factory manager and a member of the board of directors for several years.

Gregory Tire & Rubber 1926 Ltd., Port Coquitlam, British Columbia, according to Plant Manager F. Jamieson, has been obliged recently to largely increase its shop equipment on account of steady increase in domestic and export sales. Tires and tubes are being made in a full range of sizes, including a new "Express Type" high speed bus and truck tire in 5, 6, and 7-inch sizes.

Obituary

Raymond B. Ketchum

The many friends of Raymond B. Ketchum, president of Ketchum Brothers, Inc., heard with deep regret of his sudden death on June 2 in Pasadena, California. He was fifty-two years of age.

Mr. Ketchum was well known in Montana, which state he had for years been actively assisting in developing, and where he had acquired extensive oil lands. In 1916 he went to California, and with his brother, Z. G. Ketchum, established a company for handling belting, with offices at 1234 East Eighth street, Los Angeles, California. The organization is still carrying on business at the same location.

Mr. Ketchum was a man of most kindly disposition and sincerely wished to materially aid his various acquaintances, regardless of their station in life. He was a member of the Gables Beach Club, the B. P. O. E. and the Los Angeles Athletic Club. His widow and a sister survive him, while of his six brothers, three are associated with Ketchum Brothers, Inc., and another, R. F. Ketchum, is president of the Kansas City Rubber & Belting Co., Kansas City, Missouri.

R. B. Ketchum

John C. L. Zorn

News has been received of the death on June 19, of John C. L. Zorn, partner of the well-known London firm of Zorn & Leigh-Hunt. Mr. Zorn, who was sixty-one years old, had recently undergone a serious operation from which it at first appeared he would make a good recovery, but a relapse set in which ended fatally.

As is known, the firm of Zorn & Leigh-Hunt is very much interested in rubber production in the east and through their agency many plantation rubber companies have been formed. The late Mr. Zorn did not participate in these activities to the same extent as his brother, D. F. L. Zorn, being more attracted to economical, financial and political matters. However, he was a well-known figure on the London Stock Exchange where the charm of his personality brought him many friends, as it did everywhere, and his death is regretted by a large circle of friends and acquaintances.

Prominent Dutch Official

Ferdinand Louis Joosten, a member of the firm of Joosten & Janssen, Amsterdam, died on May 24, 1927, at his country home at Huizen, N. H., Holland. Mr. Joosten was born in Amsterdam, March 24, 1869, and was educated in the high schools of that city, later entering Leyden University, where he was graduated in law in 1890. He became associated with the rubber industry in 1908, establishing himself in Amsterdam as a broker in tin and rubber, while in 1911 he entered into partnership with Ernest Janssen under the firm name of Joosten & Janssen. In 1916 Mr. Janssen opened a branch office in New York City.

Ferdinand L. Joosten

Mr. Joosten was well known as one of the leaders in Holland's rubber industry, being one of the founders of the Amsterdam Association for the Rubber Trade. He was appointed secretary at this organization's first meeting and held this position, with that of a director, up to the time of his death. He was also secretary of the Netherlands Association for the Rubber Trade, as well as being a member of many societies, business and fraternal organizations. He had served on the Honorary Advisory Committee on International Exhibitions of Rubber and Other Tropical Products and Allied Industries. A man of strong yet winsome personality, Mr. Joosten had many friends in the industry, and his death is deeply regretted by all.

Vice President Simplex Co.

Charles Anthony Morss, vice president of the Simplex Wire & Cable Co., and former Governor of the Federal Reserve Bank of Boston, died July 4, at his home in Brookline, Massachusetts. For several months he had been in failing health.

C. A. Morss

He was born in Boston, July 13, 1857, and was educated in that city's schools. After being associated for some 14 years with the wool industry, Mr. Morss in 1889 became connected with the Simplex Wire & Cable Co., and held the office of treasurer after the company's incorporation in 1895, resigning his duties in 1917 in order to become Governor of the Federal Reserve Bank of Boston. He held this latter position until 1922, when he again resigned to take a needed rest and was succeeded by W. P. G. Harding. After his return to active business, Mr. Morss was made vice president of the Simplex organization.

At the time of his death he was a director of the last mentioned company, as well as the Simplex Electric Heating Co., and the Morss & Whyte Co. He was also a member of the Chamber of Commerce of the United States, the Boston Chamber of Commerce, and the Rubber Association of America. He is survived by his widow, three sons, a daughter and three brothers.

Founder Columbus Rubber Co.

Gustave Gravel, for many years connected with the Columbus Rubber Co., Montreal, Ltd., which he founded, died in Montreal on July 10, at the age of 83 years. He had been ill for over a year. Practically all of his business life was connected with the rubber industry. He was first with the Canadian Rubber Co., leaving to establish his own business. Mr. Gravel was a life governor of Notre Dame Hospital and of St. Justine Hospital. He

is survived by one son, Alex, and three daughters.

Former Treasurer Woonsocket Rubber Co.

Frederick Cook, former treasurer of the Woonsocket Rubber Co., Woonsocket, Rhode Island, and well-known financier during the early years of the present century, after a two years' illness died June 19 in his 87th year at his home, 80 Elmgrove avenue, Providence. He was born in Cumberland, Rhode Island, the son of George and Rachael Cook, on June 29, 1840. He attended the public schools of that town and at the age of 17 entered the woolen business in Woonsocket with the Harris Co., where he became head bookkeeper, remaining until 1876 when he accepted a similar position in Providence.

In 1885 Mr. Cook became connected with the Woonsocket Rubber Co., becoming treasurer in May of that year. For 17 years be remained at this post, retiring in June, 1902, after introducing many innovations in method and practice in his department which were of great value and many of which are still in vogue. He is survived by his widow, two sons and a brother. Mr. Cook had no fraternal affiliations, his greatest attachments were his home and family wherein he found most enjoyment.

Veteran Rubber Man

John J. Shea, vice president of the Hartford Rubber Co. and the Providence Rubber Co., subsidiaries of the United States Rubber Co., died at his home in Hartford, Connecticut, July 19, after a short illness. Mr. Shea was born in West Hartford, June 13, 1871, and had retired from business less than a week ago.

Starting as foreman with the Hartford plant of the United States Rubber Co., Mr. Shea was rapidly advanced to the positions of superintendent and vice president. In 1915 he was appointed factory manager of the Colt plant of the organization, and a few years ago became vice president of the Hartford and Providence companies, completing before retirement, his thirty-seventh year with the United States Rubber Company.

A more detailed obituary and portrait will appear in our next issue.

Owen P. Reed

Owen P. Reed, foreman of the belting department of the Whitehead Brothers Rubber Co., Trenton, New Jersey, recently died suddenly from a stroke of apoplexy. He was 63 years old and a member of several fraternal organizations. Mr. Reed was employed by the Whitehead Brothers Co. for 46 years.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
971	Machine for cutting patterns.
972	Source of supply for hollands.
973	Machine for cutting rubber thread.
974	American firms making cut sheet rubber.
975	Appliance to produce superheated steam.
976	American buyers of crepe and sheet rubbers.
977	Manufacturer of 2-roll calender, 36 or 48 inches.
978	Manufacturer of bead rolling machine for toy balloons.
979	Source of supply for ethylene dichloride.

Foreign Trade Information

For further information concerning the inquiries listed below, address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Country and Commodity	Purchase or Agency
26,219	Germany. Rubber toys, balls and balloons	Agency
26,288	Germany. Conveying belts	Purchase
26,289	Canada. Fishermen's suits	Purchase and Agency
26,290	Belgium. Rubber and balata belting	Agency
26,291	Argentina. Waist belts, with or without buckles	Agency
26,292	Czechoslovakia. Technical rubber goods	Agency
26,293	Belgium. Rubber goods, such as toys, bathing caps and aprons	Agency
26,339	Denmark. Rubber goods	Agency
26,345	Czechoslovakia. Crude rubber	Purchase
26,357	Colombia. Automobile tires	Agency
26,358	Java. Waist belts with slip buckles	Agency
26,359	Australia. Rubber surgical goods, especially gloves	Sole Agency
26,383	Canada. Rubber aprons and baby garments	Agency
26,396	Switzerland. Air hose for tire inflation	Purchase
26,418	Germany. Automobile tires	Agency
26,421	South Africa. Sporting goods	Agency
26,424	England. Hot water bottles, rubber mats, aprons and overshoes	Sole Agency
26,428	India. Toy balloons	Purchase
26,460	Rumania. Rubber and balata belting	Purchase and Agency
26,477	Italy. Toy balloons in different colors and sizes.	Purchase

United States exports in 1926 of waterproofed outer garments were valued at $512,135. Of this amount, Cuba's share, according to *Commerce Reports*, was $94,829, while that of Mexico was $68,274.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

Number	Special Circular
1541	"Crude Rubber News Letter."
*1544	"May Imports of Rubber Tires into the United States."
*1545	"May Imports of Golf Balls into the United States."
1547	"Tire Exporters' Weekly News Letter."
*1548	"Comparative Statement of United States Exports of Tire Repair Materials, 1923-1926."
1549	"Crude Rubber News Letter."
*1550	"Rubber Invoiced to the United States During the Week Ended June 25, 1927."
*1551	"Canadian Tire Exports During May, 1927."
1552	"Mechanical Rubber Goods Exporters' Monthly News Letter."
*1553	"German Tire Exports During the First Three Months of 1927."
1554	"Rubber Division Special Circulars Second Quarter of 1927."
1555	"Rubber Sundries and Specialties News Letter."
*1556	"Italian Tire Exports During the First Quarter of 1927."
*1557	"Belgian Tire Exports During the First Quarter of 1927."
1558	"Tire Exporters' Weekly News Letter."
*1559	"Rubber Invoiced to the United States During the Week Ended July 2, 1927."
1560	"Crude Rubber News Letter."
*1561	"French Tire Exports During the Month of May, 1927."
*1562	"French Rubber Footwear Exports During the Month of May, 1927."
*1563	"British Exports of Automobile Casings During May, 1927."
*1564	"British Exports of Rubber Footwear During May, 1927."
*1565	"Preliminary Statistics of United States Crude Rubber Imports, June, 1927."
1566	"Tire Exporters' Weekly News Letter."
1567	"Rubber Footwear Exporters' Monthly News Letter."
*1568	"Rubber Invoiced to the United States During the Week Ended July 9, 1927."
1569	"Crude Rubber News Letter."
*1570	"International Association for Rubber and Other Cultivations in the Netherlands Indies—Thirteenth Annual Report, 1926."

AMERICAN IMPORTS OF RUBBER TIRES

During the year 1925 the United States imported rubber tires numbering 21,139, with value $263,185, or at an average value of $12.45 a tire. In the year following the number of tires imported was 17,504, value $161,303, the average value being $9.21. During both years France was the leading source, sending to the United States in 1925 19,227 tires, value $246,861, and in 1926 4,784 casings, value $60,848. During the first five months of 1927 France's contribution has been 1,295 tires, value $26,869, while imports from all countries have totaled 1,645 tires, value $32,137. It will be noted that the average value per casing for this five months' period has risen to $19.53.

The Rubber Industry in Europe

Great Britain

British Restriction Views

Though we learn from a report in the *Financial Times* of June 18 that Mr. Amery definitely announced in the House of Commons that the government was not contemplating the abolition of restriction, we find that a number of papers seem to share the view that restriction is harming the British rubber-growing industry.

The *Economist* feels that restriction is largely responsible for the recent trend of the rubber market and regrets that the opportunity was lost of obtaining peace with honor by abolishing the system when the 100 per cent level was reached.

The *Statist* points out that the failure to realize that circumstances are entirely different now from what they were in 1920-1922 will cause too long a clinging to the protection of restriction and that a struggle against Dutch competition and reclaimed rubber will inevitably require a period of low prices before demand can overtake full supply.

The *Manchester Guardian-Commercial* desires to leave aside the question as to whether restriction rescued British rubber growers from their plight in 1922 or whether the rapid growth of the use of automobiles would have righted matters anyway after a short time, but certainly finds that it "failed grotesquely to achieve the secondary object of stabilizing the price at a remunerative level . . . . a fact that was patent long before the present slump."

The Other Side of the Question

It cannot be said that the arguments of the prorestrictionists are remarkable for forcefulness or for the power to convince. The old hacks, that restriction saved the rubber industry for consumers as well as growers, that the Dutch are ruining their estates by overtapping, etc., are trotted out. Criticism of restriction in view of present prices is characterized as loose talk and it is asserted with the utmost gravity that the present state of the market is an illustration of the need for restriction, for if rubber sells at 1 shilling 5 pence per pound with restriction at 60 per cent, then it stands to reason that the complete removal of restriction would cause a relapse to a price under cost of production. And that after almost five years of restriction!

Dangerous to Tinker with Restriction

But even ardent restrictionists have to admit that restriction needs overhauling, standard production needs to be reduced, the pivotal price is too high and has much to do with the stimulation of expansion in the Dutch colonies. But there seems to be a strong stand against even this in some quarters. One suspects that after having been in force for so long, restriction has assumed a certain role in the calculations of a number of those in any way connected with the rubber industry, one that would make it dangerous to tinker with restriction in any way, let along abolish it.

Estate Outputs

For those that are interested not so much in the effect of restriction on prices, as in its working at the centers of production in keeping rubber off the market, some calculations concerning outputs of 398 companies in Malaya, Ceylon, Dutch colonies, India, Burma, Sarawak and Borneo, made by the *India Rubber Journal* may prove to be illuminating. Taking the outputs of 205 Malayan companies over the seven months November, 1926-May, 1927, we find that these show an excess of 12.25 per cent over the average exportable allowance for the period, which works out at 72.86 per cent. On the other hand figures of 353 Ceylon companies show a shortage of 2.87 per cent. Percentages for the period January to October, 1926, irrespective of any carry forward from previous periods, show that the Malayan companies were 6.95 per cent short of their allowable quota for ten months, and Ceylon short by 13.10 per cent. The Malayan companies have now more than made up their deficit, but the Ceylon companies have increased theirs. Figures of outputs from 254 companies in Malaya during May, 1927, show, when compared with crops reported for May, 1926, increases in the case of about 40 per cent. Of 75 companies operating in the Dutch colonies, over 60 per cent show increases, while of the Ceylon companies only 10 out of a total 44 listed show slight increases.

Kensington Rubber Paving

Cowper's paving blocks, which had been laid in the Southwark Borough Highstreet in 1924, are to receive a new test. The favorable report made at the time is confirmed by a recent report by Colonel R. E. Crompton, the expert consultant on rubber roadways. In this report he states that Cowper's blocks differ from all others he has seen in two essential points, first they are more elastic, thereby reducing the shock caused by the wheel on the concrete foundation, and then they have interlocking means which prevent the rolling and creeping action which was one of the causes of the failure in the past.

It further seems that Mr. Cowper's practical knowledge has enabled him to develop methods by which these blocks or the thinner tiles can be manufactured in quantity at a cost that first seemed surprising but which careful examination showed to be founded on well-considered estimates and great practical knowledge of the process involved.

It is understood the Council of the Royal Borough of Kensington has selected a site on Thurloe Place, South Kensington, for a demonstration of these blocks. The traffic here is very considerable so that the blocks will be put to a very severe test. Rubber Roadways, Ltd., it seems, has undertaken to pay for 300 square yards out of the 400-500 square yards which is the total area of the roadway, as they cannot meet the cost of completing the site as recommended.

British Notes

The new import duty on tires has caused Messrs. Pirelli Ltd., 144, Queen Victoria street, London, to decide on establishing in England an up-to-date plant for the manufacture of pneumatic, semi-pneumatic, and solid tires to meet the demand for their products here. If the decision of Michelin to erect a factory in England was influenced by the change in the British fiscal policy with regard to tires, and the fact that Goodyear has secured suitable location for a tire factory here, then three new tire factories will be added to the British tire industry as a direct result of the new duty.

Vol-crepe is a new soling material that is being introduced by the Avon India Rubber Co., Ltd., Melksham, Wiltshire, England. The material is light and flexible and can be solutioned, stitched or nailed. It is claimed that it

has all the advantages of plantation sole crepe without its drawbacks, takes a good finish, retains its color in age and does not perish.

The British Industries Fair is to be held from February 20-March 2, 1928. Larger exhibition areas will be provided in both London and Birmingham, it was announced in the House of Commons recently. The last fair was so successful, that a considerable increase in the number of exhibitors is expected by the Board of Trade.

Klinger Valves will be manufactured exclusively by Messrs. Beck & Co., Ltd., 130 Great Suffolk street, London, for Great Britain and Ireland. Up to the present these valves have been imported from the Vienna works of Richard Klinger.

Sweden

Tillit, New Protective Coating

The *Chemical Trade Journal* of June 24 publishes particulars taken from the *Teknisk Tidskrift* (No. 16, 1927), regarding a new protective coating named Tillit which has just been placed on the market by Hugo Tillquist, Machine Agency, Stockholm, Sweden. The chief constituents are rubber and bitumen dissolved in benzol. The bitumen is first artificially oxidized to remove its sulphur content and to give durability; it is then combined with the rubber by a special heating process, by which a high degree of flexibility and power of adherence are added.

The material has been officially tested for its qualities as protection against rust, with very favorable results. In one experiment ironplate strips previously coated with it were dipped in a sal-ammoniac solution, acidified with hydrochloric acid, a powerful rust producer. But even after 46 days these strips showed no signs of rust while strips painted with red lead and linseed oil began to rust after 7 days. The penetrating voltage was found to be 9,000-12,000 volts with a coating of 1/64-inch thick, thus showing the entire absence of pores.

Tillit may be used to waterproof and protect concrete, brickwork, wood and felted roof, to rustproof iron, to coat ship bottoms, for preserving belting and wire cables exposed to damp or corrosives. In addition a special solution has been worked out for internal use in boilers to prevent corrosion and formation of boiler-scale. The coating resists a temperature of more than 200 degrees C. without peeling off and without diminishing heat transmission. It is further claimed for Tillit that it adheres even to damp and rusty surfaces and may be applied in any weather.

Germany

The *Statistische Reichsamt* has just published the first results of the industrial census taken on June 16, 1925. On the whole the figures have come out rather high, due to the fact that data for branches of firms have not been separated from that supplied by main offices, so that in several instances repetition was unavoidable. Once this is taken into account, however, the figures for the rubber industry are sufficiently interesting and have accordingly been presented in the following table:

Industrial Groups	Number of Industrial Establishments	Number of Employes		Horse Power	
		Total	Female	Electric Motors	Other Motive Force
Production all kinds rubber goods	30	18,257	6,523	24,459	6,620
Production tires	477	24,034	6,764	29,963	3,389
Production soft rubber goods	711	16,505	7,570	13,781	7,418
Production hard rubber goods	42	4,617	1,027	3,848	1,555
Reclaiming rubber	11	375	53	644	609
Production gutta-percha goods	5	217	62	259	135
Total number producing rubber, etc.	1,276	64,005	21,999	72,954	19,726
Production asbestos goods	57	3,707	1,853	3,675	1,224
Total rubber industry	1,333	67,712	23,852	76,629	20,950

As against these figures for 1925 in 1907 there were only 356 factories employing altogether 28,664 persons, of whom 8,007 were women.

German Rubber Dividends

The *Frankfurter Zeitung* has worked out an interesting comparison of prewar and present capital and dividends of several big rubber manufacturing concerns in Germany. In each case the same firms are treated. The averages are given below.

Business Year	Average Paid-up Capital	Average Dividend in % of Capital
1912-13	6,100,000 Marks	6.1
1923-24	4,000,000 Marks	3.3
1924-25	4,000,000 Marks	3.1
1925-26	4,000,000 Marks	1.8

The above clearly shows that German rubber manufacturers are a long way behind 1913 yet as far as dividends are concerned. Incidentally, a comparison of average rubber dividends with the averages obtained for all other industries indicates that the German rubber industry has always turned out dividends rather considerably below the average for all industries, which are given as 9.6 for 1913, 5.4 for 1924, 6.7 for 1925 and 7.5 for 1926.

Tires at Cologne Exhibition

To continue the report begun in these columns last month, mention must now be made of several other prominent German and foreign firms which had interesting displays.

One of the most successful stands was that of Peters Union. This firm is working along the same lines as the Continental works and has now also put on the market the new low-pressure tires for trucks, the sizes being 34 by 7.50, 36 by 8.25, 38 by 9.00 and 40 by 10.50, all for 20 inch felloes. The drop-center rim for passenger cars had been taken over in the fall of 1926.

Vorwerk & Sohn exhibited solid and elastic tires and several old tires that had already run over 100,000 kilometers. To impress upon visitors the tough quality of the rubber used, the firm showed a tire from which a narrow strip about a foot long had been cut. From this thin rubber cord, the tire and a weight of 80 kilos (about 176 pounds) were suspended without rupturing the cord.

Polack had on view a new giant balloon tire for buses. For the first time the Cologne firm of Peter Rost appeared at the exhibition as a tire manufacturer. This firm now supplies solid and extra-elastic tires in standard sizes, as well as pneumatic tires for trucks.

The well-known Cologne firm of Franz Clouth makes tires for trucks known as "wave" tires. These are solid and elastic tires which owe their name to oblique depressions on the sides, which produce a wavy outline.

It was found rather surprising that of the American firms only the U. S. Royal Cord and Overman were represented at the exhibition by their German sales branches, and that Firestone and Goodyear, for instance, do not seem to be making any efforts to capture the German market.

Of the Continental firms represented, Michelin of course was the most important. Incidentally, this firm will soon be a serious competitor on the German market.

The Pirelli firm had on view an elastic tire which has a tread with profile similar to that of the pneumatic tire. The side walls have concave depressions and are reinforced by rubber ribs.

Engelbert was the only Belgian tire manufacturer represented. It seems that this firm is already very well-known known among German tire consumers.

Tire-repair materials were exhibited by a number of firms. Brunotte & Nic-

meyer showed a hinged mold to be used with air or sand bags, and Veni Apparatebau had an apparatus for the complete vulcanization of a new tread. In addition, Elfie concern, of Magdeburg, showed a novel tire protector consisting of about eight layers of cotton of different weaves. This band of cotton is to be inserted between the tire and tube and according to demonstrations, any pointed object, like a nail, meets with such firm resistance, that during the rapid motion of the wheel, the point becomes bent and is rendered harmless.

Deutsche Kautschuk-Gesellschaft Meeting

Over 100 persons attended the first general meeting of the Deutsche Kautschuk-Gesellschaft which was held June 12 and 13 at Essen, Dr. Max Clouth presiding. The following important papers were read by well-known scientists:

Dr. Pummerer lectured on The Constitution of Rubber; Dr. Miedel, on The Physical Qualities of Gutta Percha and Balata; Dr. Rosbaud undertook to read the paper on Rontgenoscopy of Rubber and Related Materials, by Dr. E. A. Hauser, who is at present in Malaya; Dr. Katz spoke on Rontgenoscopy of Organic Ply-Polymerization Products; Dr. Staudinger discussed the paper of Dr. Pummerer at some length, giving expression to his own views on the subject of the Constitution, which are diametrically opposed to those of Pummerer.

Technical papers were read by Dr. St. Reiner, Rubber as Dielectric Material; Dr. Schidrowitz, Vulcanization of Concentrated Latex; Dr. A. van Rossem, The Mechanical Properties of Rubber at High Temperatures; Dr. L. Hock, Rubber and Rubber Mixings from the Standpoint of Energy Considerations; Dr. F. Kirchhof, The Oxidation of Rubber, from the Technical and Scientific Viewpoint.

The First Toy Balloon

In a recent issue of the *Gummi Zeitung*, early patents covering toy balloons are mentioned. The writer of the article in question found some British patents, the earliest of which was No. 2,256, September 26, 1856, taken out by a certain Marius Pellen. In his patent claims, he distinctly says that the rubber prepared in England is peculiarly suited to making toy balloons, but it should first be vulcanized. This patent and two others of the same year (Nos. 2,685 and 2,715) which also refer to the making of toy balloons from rubber, plainly indicate that at that time there was a fad for these little rubber toys.

The Kolloid-Gesellschaft held its sixth annual meeting at Essen from June 8 to June 10. Several interesting papers were read, one by Paul Stamberger, Budapest, on rubber fillers, "A Contribution to the Colloid Problems of the Rubber Industry," deserving special mention.

Italy

The record exports and imports reported for 1925 were not sustained during 1926, a slight decrease both in quantities and values being shown by recently published statistics.

Tabulated exports of rubber articles, which include most rubber products excepting footwear, show the following development in the last 15 years:

	Quintals	Lire
1911-1913 (yearly average)	29,156	53,309,000
1914-18 (yearly average)	33,454	48,578,000
1919	31,133	75,946,580
1920	74,949	178,882,490
1921	42,240	147,415,736
1922	48,294	155,657,448
1923	74,255	181,838,934
1924	103,335	257,851,429
1925	125,437	412,508,954
1926	115,655	404,920,140

A consideration of these figures, not including those for 1920 which chiefly reflect the hunger for goods immediately following the armistice, shows a steady growth which reached its peak in 1925 when exports had increased 330 per cent in quantity and 680 per cent in value as compared with the average for 1911-1913.

The exports consist of 70 per cent of pneumatic tires, 20 per cent solid tires and 10 per cent other goods.

The chief markets for tires in Europe are Great Britain, Belgium, Spain, Austria, Denmark and Sweden; in Asia, British India and Dutch East Indies; in South America, Brazil and Argentina. In 1926 the total quantity of pneumatic tires exported was 79,254 quintals against 87,832 quintals in 1925, while exports of solid tires were 14,852 and 25,770 quintals for 1926 and 1925 respectively.

The imports include rubber footwear, tires and tubes, apparel, rubber belts, elastic thread and technical goods.

Imports of manufactured rubber for 1911-1926 work out as follows:

	Lire
1911-1913 (yearly average)	27,281,852
1914-1918 (yearly average)	28,283,120
1919	55,005,240
1920	102,951,535
1922	44,703,312
1923	64,517,692
1924	70,276,312
1925	95,434,907
1926	84,501,778

The movement of crude rubber into Italy from 1911 to 1926 conforms to the upward tendency already noted for exports and imports of the manufactured article as shown below:

	Tons	Lire
1911-1913 (yearly average)	2,844	25,600,000
1919	10,528	100,000,000
1920	6,804	68,900,000
1924	9,460	115,900,000
1925	12,365	339,400,000
1926	10,640	309,100,000

Valued at average prices prevailing during 1925, the total annual production of rubber goods in Italy now comes to over one billion lire, half of the output being consumed locally and the other half exported. Italy, therefore, is assuming an increasingly important position among rubber manufacturing countries in Europe.

Up to quite recently Italians had apparently not been particularly interested in growing rubber themselves to help cover the raw material requirements of their rapidly developing manufacturing industry. So far Pirelli has assumed the most important, if not the only initiative in this direction and the concern now owns an estate in Malaya, about 40 miles from Singapore, known as Ulu Tizam, covering an area of 1,600 hectares of which 300 hectares have been planted up. Besides this land, the firm has an older and larger estate in Java with an area of 2,250 hectares, of which 1,850 hectares have been brought under rubber.

The Colonial Agricultural School at Florence, which has already trained 10 of the 14 Italians in charge of these plantations, intends to extend its colonial curriculum.

France

French tire exports during the first quarter of 1927 show a marked increase over those for the same period in 1926 as may be seen from the figures which were 8,410,500 kilos against 6,426,600 kilos. It is estimated that the 1927 exports included 655,040 automobile casings. Almost one-fourth, 2,196,100 kilos, went to the United Kingdom. Switzerland was the next biggest customer having taken 973,100 kilos. Other big European buyers were Belgium and Luxemburg, 469,900 kilos, Spain, 408,800 kilos, Italy, 315,800 kilos, and the Netherlands, 229,700 kilos. Outside of Europe, considerable numbers of French tires went to Brazil, 654,500 kilos, and Argentina, 271,200 kilos, to the British East Indies, 527,400 kilos, to Australia, 185,500 kilos, and to Algeria, 265,700 kilos, and Morocco, 172,000 kilos.

Footwear exports from France during the first quarter of 1927 included all kinds of rubber boots and shoes and canvas rubber-soled shoes and totaled 923,300 gross kilos against 848,100 gross kilos in the first quarter of 1926. It is interesting to note that of the buying countries the United Kingdom again heads the list, having imported from France over one-third of the total exports, 315,400 gross kilos, while the second biggest customer was Syria, 122,300 gross kilos. Switzerland came a close third, 109,600 gross kilos; followed by Belgium and Luxemburg, 64,700 gross kilos; Austria, 57,700 gross kilos; and Czecho-Slovakia, 39,600 gross kilos. It is worthy of note that the various parts of Africa together took 82,600 kilos of French footwear, Egypt accounting for 18,600 kilos, British Africa for 17,300 kilos and Algeria 12,700 kilos.

The Rubber Industry in the Far East

Malaya

The question that is occupying everybody's mind at present is what the effect of the cut in exportable will have on the statistical position of rubber and naturally on the price. In a recent issue of the *Straits Times* Mr. Still works out the amount of rubber that will probably be kept off the market by the renewal of restriction. Putting the Malayan standard at 330,000 tons and that for Ceylon at roundly 74,000 tons, the exportable in the first half of the restriction year would, he finds, be:

	Tons	
Malaya First Quarter	66,000	
Second Quarter	57,750	
Ceylon First Quarter	14,800	
Second Quarter	13,000	
		151,550
If Third and Fourth Quarters are at 60 Per Cent.		
Malaya Gives	99,000	
Ceylon Gives	22,200	
		121,200
The Whole Year		272,750

Deducting this 272,750 from 404,000, the combined standards of Malaya and Ceylon, we get the cut for the whole year, 131,250 tons.

However, things are not quite as simple as all this. In the first place there are the unused coupons to be considered. While considerable use seems to have been made of unused coupons during the last two quarters, it still seems probable that about 20,000 tons of these rights will be available in the second half of the year.

Ceylon Coupons

The unused coupon rights in Ceylon constitute a real problem. As is known, Ceylon succeeded in getting the time limit on all its coupons abolished on the grounds that it has no free area like Singapore and Penang where rubber can be stored till it is required for export. Now Ceylon's standard is high, so that, unless restriction is drastic, Ceylon may, as Mr. Still points out, accumulate enough unused exports rights to make herself independent of the restriction law, at least for some time. For the present quarter, her exportable is calculated at about 12,950 tons. She can export her full quota of 18,500 tons and still have 6,720 tons of unused rights left for future use.

Malayan Standard High

But we would remind that Malayan standard is also too high, so that it is hardly to be expected that restriction will keep 131,250 tons off the market from the restriction area as calculated. And then of course we have to take into consideration the increasing so-called Dutch native exports, which, as we have mentioned on more than one occasion, have an uncanny habit of mounting as the exportable quota in Malaya and Ceylon is lowered. Mr. Still has duly considered the Dutch output, and taking that in connection with the unused rights, he remarks that it does not seem probable that the exportable from the restriction area will be capable of increase until 1928. Here let it be suggested that it is a moot question whether very much more rubber would come on the market from British sources even if the exportable were a good deal higher than it is.

Labor in Malaya

From a government record of the immigration and emigration of Indian labor during 1926, we learn that the number of emigrants who went to Malaya during that year was double that of the preceding year. Standard rates of wages of 40 cents (Straits currency) a day for an able-bodied male laborer above the age of 16, and 30 cents for an able-bodied female laborer above the age of 15, have been fixed by the Federated Malay States Government for three coast districts in Selangor State, and the question of fixing standard rates for other districts is under consideration by that government.

During the year 1926 the total number of arrivals of immigrants who entered Malaya from various Asiatic ports (Chinese, Indian, etc.) came to 646,174, the total departures from Malaya were 366,171, leaving an excess of arrivals of 280,003.

Malayan Notes

Dr. Earnest A. Hauser, the well-known German scientist, has arrived in Malaya. He is to carry out a certain amount of research work which, it is expected, will add greatly to what is at present known about the colloidal chemistry of rubber latex. The result of Dr. Hauser's investigations will be incorporated in the Gow lectures at the London University. Incidentally, these lectures have been postponed from May to November.

The Prang Besar Rubber Estates, Ltd., is a concern that of late has frequently been mentioned in the reports of several old-established rubber companies, who hold interests in it. This concern was formed to specialize in the nursery side of rubber plantings besides undertaking the usual rubber company operations. It is doing experimental and research work along the lines of vegetative and generative propagation of rubber and will eventually supply selected and proved planting material to the rubber companies which hold an interest in it. Ledbury Rubber Estates, Ltd., Cluny Rubber Estates, Ltd., Mentakab Rubber Co., Ltd., are among the firms that have shares in this company.

The Lanadron Rubber Estates, Ltd., reports a crop for the year just ended that was about 200,000 pounds higher than for the preceding year. The concern has forward contracts to deliver out of the year's crop at prices equivalent to about 2 shillings 5 1-6 pence per pound. Discussing restriction, Eric Macfadyen, chairman, said that if any shareholder was disposed to grumble, he would remind him that a few years ago at the annual meeting, he had to analyze not a profit of over £79,000, but a loss of over £13,000.

The Ledbury Rubber Estates, Ltd., has jointly with the Lanadron company undertaken the development of a new estate. This is an area of 2,300 acres acquired direct from the government. It is situated in Negri Sembilan and is to be known as Serting Estate. The Ledbury company will hold one-third interest in this against the Lanadron's two-thirds. Ledbury it is interesting to learn was allowed to export over 800,000 pounds more than in the previous year. This is an increase of some 35 per cent. Total dividends amounting to 45 per cent were turned out for the year.

Rubber exports from Malaya during May amounted to 31,393.00 tons against 31,231.46 for the same month the year before. Total exports for the first five months of 1927 came to 164,254.15 tons as compared with 150,863.45 tons the preceding year. Native imports again showed a considerable increase, the figure for the month of May having been 15,491.09 tons against 10,604.29 tons in 1926, while the totals for the first five months of 1927 and 1926 were 72,712.97 tons and 54,513.35 tons respectively. To the figures for rubber and liquid latex we note for the first time that exports of concentrated latex have been added. These amounted to 18.46 tons for the month of May.

Netherlands East Indies

Native Rubber

From the final report of the Department of Agriculture, Commerce and Industry regarding the native rubber industry which has just been published, we learn that owing to the extensive plantings in recent years, a considerable increase in output is to be expected in 1929, 1930 and 1931. The productive area will show no increase in 1927, but a moderate increase is looked for in 1928.

This report also confirms statements from certain observers in Sumatra and Borneo, that on fairly good soil, bark removal is very good, and even trees that have been badly manhandled give good yields after they have been rested for a short time. Pests and diseases were not found to be very prevalent anywhere, so that it can by no means be said that the existence of the plantings is threatened. Adulteration, which was extensively practiced, has effectively been curbed, at least in its more flagrant form.

Export of untreated native rubber to Singapore is chiefly in the hands of Chinese, although Malays have been taking this up too during the last few years, which has been encouraged by a Dutch steamship line which advances money on cargoes and gives free passage to shippers.

Budded Rubber Yields

In the *Archief voor de Rubber-Cultuur*, May, 1927, Dr. C. Heusser publishes extensive tables to show the results obtained by tapping buddings in the isolated seed gardens from clones 33, 36, 50, 52 and 80. Records of 4 buddings from clone 49 during the tapping years 1924-1926 have also been added.

The tapping system (½ circumference, alternate monthly) tappers, etc., were the same as last year. From the figures given, the table below has been compiled.

Clone	No. of Trees	No. of Tapping Days	Average Tapping Height c.m.	Highest Yield Grams	Lowest Yield Grams	Average Yield Grams
33	10	163	57	33.75	11.94	27.46
36	10	122	61	34.42	12.40	23.24
50	10	164	51	52.31	16.21	35.51
52	11	155	54	27.23	10.55	19.73
80	8	135	50	39.93	12.01	22.08
49	4	139	60.4	28.7	21.90	23.90

Three trees of clone 33 were affected by brown bast, but were tapped again after treatment according to the Keuchenius method.

Two trees of clone 36 were broken by wind and have not been included in the records. No. 1 of clone 80 had to be rested on account of a bad attack of pink desease.

Rubber Duties

Manufacturers who buy up native rubber for remilling purposes are protesting against the export duties recently fixed on remilled rubber, for it seems that these duties severely handicap them against buyers of native rubber from Malaya.

A simple calculation shows that because of the high export levy on worked native rubber, the Malayan buyer of the unworked article can easily afford to pay the native owner two to three cents per kilo more than the local manufacturers, thus competing with the latter in their own home.

A local manufacturer who purchases 100 kilos of scraps from a native and gets 70 kilos of blanket crepe out of it, pays 5.60 guilders duty on the stuff when he is ready to export it, while a dealer or manufacturer from Malaya has only to pay the export duty of 2.85 guilders on the 100 kilos of scraps he purchases here.

This, it is pointed out, is a peculiar way of protecting local industry and certainly could not have been the intention of the authorities, when the duties were fixed.

Ceylon

At a recent meeting of the Planters' Association of Ceylon, the pivotal price of rubber was discussed by Sydney Smith. He declared that 1 shilling 9 pence was too high and that the pivotal price should be reduced to a figure at which reclaimed rubber would be thrown out of the running. To strengthen his stand he quoted extensively from recent arguments in the London *Statist* on the subject, all tending to show that the high figure stimulates Dutch plantation and native production and is also fostering a new industry, rubber reclaiming in America.

Mr. Smith further stated that a high authority in the rubber world considered that if restriction were to continue, it would only be a question of time before the British rubber industry would occupy a secondary place. Lord Stevenson put the price at 1 shilling 3 pence, and the sooner the present high figure was reduced the better, though it would be necessary for the reduction to be gradual. He then proposed his resolutions, which were: (1) The Planters' Association of Ceylon is of the opinion that unless the pivotal price of rubber is reduced reclaimed rubber will continue to be used to the detriment of plantation rubber. (2) That this resolution with a copy of the arguments brought forward by Sydney Smith be sent to the Ceylon Association in London and to the Ceylon Estates Proprietary Association.

Reassessments

At the same meeting a resolution was unanimously passed which aims to correct the present system of assessment. It is pretty generally believed that many estates have too high a standard, while in other instances there has been underassessment. The resolution read as follows:

"That restriction should be made more equitable in its bearing by reassessment; this reassessment should be based on actual crop produced during any consecutive period of 12 months during the years 1925-1926. Allowance should be made as at present for untapped areas and for any untoward circumstances such as shortage of labor, etc."

The view was also expressed that the sale of uncouponed rubber be made illegal.

Ceylon Notes

Bud grafting. The Ceylon Legislative Council is to be invited by the government to decide on the desirability of reserving a part of the surplus of about 305,000 rupees now standing to the credit of the Rubber Restriction Fund to assist in carrying out the scheme to foster bud grafting and seed selection which the Board of Agriculture formulated last November.

German trade with Ceylon has of late increased to such an extent that conditions at present are practically on a level with what they were before the war. During the period January 1 to April 26, 1927, all products showed increases when compared with figures for the same period in 1926 all except rubber which fell considerably, the 1927 shipments having been only 159,906 pounds against 981,462 pounds of rubber in 1926.

Rubber Patents, Trade Marks and Designs

United States

June 7, 1927*

1,631,261 Garter. Charles Glowacki, Philadelphia, Pennsylvar a.

1,631,310 Counter and heel guard. Maude M. Doran, Spokane, Washington.

1,631,349 Flexible wheel. William Thornton, Salt Lake City, Utah.

1,631,354 Blowout patch for balloon tires. Charles E. Ayers, Cleves, Ohio.

1,631,459 Shock absorber. Arthur Bennett, Chilliwack Township, British Columbia, Canada.

1,631,646 Diaphragm for sound reproducing apparatus. Chester W. Rice, Schenectady, New York, assignor to General Electric Co., a corporation of New York.

1,631,740 Game ball bladder. George L. Lawrence, Jr., Melrose, Massachusetts.

1,631,741 Cushion heel. Leone Lazzari and Dominic Saudino, New York, N. Y.

1,631,749 Overshoe. Frederick H. Martin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,631,928 Fabric disk wheel. John H. Doty, Akron, Ohio.

June 14, 1927*

1,632,017 Reducing garment. Bertram G. Work and Louisa N. Slade, assignors to The B. F. Goodrich Co., all of New York, N. Y.

1,632,064 Fastening device for shoes, etc. John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,632,201 Pneumatic tire. Samuel A. Steere, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,632,356 Inflatable toy. Roy B. Weimer, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,632,390 Arctic. Joseph M. Dietz, Ridgway, Pennsylvania.

1,632,395 Resilient wearing surface. John William Fellows, Arlington, assignor to Boston Woven Hose & Rubber Co., Cambridge, both in Massachusetts.

1,632,489 Solid tire. William C. Martin, Chicago, Illinois.

1,632,496 Pneumatic tire interliner. Richard H. Mullineaux, Los Angeles, California.

1,632,547 Combined brassière and dress shield. Victor Guinzburg, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

1,632,598 Hat protector. David M. Hart, New York, N. Y.

1,632,651 Flexible spotter for repairing tire casings. Elmer A. Hubbard, Flagstaff, Arizona.

1,632,731 Wheel tire. Nicolas Gherassimoff, Le Vesinet, France.

June 21, 1927*

1,632,854 Nursing nipple. Almerin E. Rogers, Placentia, California.

1,633,159 Vehicle body. Harry N. Atwood, Monson, Massachusetts.

1,633,188 Pump bearing. Immanuel Alvin Oliver, assignor to The Pomona Manufacturing Co., both of Pomona, California.

1,633,197 Closure for receptacles. William J. Snyder, Newark, New Jersey.

1,633,324 Detachable cushion heel. Leonard F. Hartung, Los Angeles, California.

1,633,484 Buoy. Otto Guidotti, Buffalo, New York.

1,633,513 Arch support. Carl G. Bergmann, Chicago, Illinois.

1,633,536 Golf ball marker. Joseph E. McGinness, Pittsburgh, Pennsylvania.

June 28, 1927*

1,633,580 Bearing. Charles Froesch, New York, N. Y., assignor to International Motor Co., a corporation of Delaware.

1,633,686 Golf tee. Andrew J. Stone, Paris, France.

1,633,701 Sounding line. Elbert J. Haynes, Cleveland, Ohio.

1,633,705 Breathing and vocal attachment. Elmer I. McKesson assignor to The Vocophone Co., both in Toledo, Ohio.

1,633,748 Pneumatic cushion wheel. John B. Kerr and Jacob R. Young, Albuquerque, New Mexico.

1,633,951 Floor mat. John J. O'Toole, Bellevue, Pennsylvania.

1,633,963 Pneumatic tire. Daniel M. Weigel, Trenton, N. J., assignor by mesne assignments, to The American Wire Cord Tire Co., Wilmington, Delaware.

1,633,988 Protector for door knobs and automobile handles. George Jones, Flushing, N. Y.

1,633,999 Elastic tire. Curt Riesebeck, Berlin-Friedenau, Germany.

1,634,032 Necktie and lining. Hugo Leoni, assignor to Super-Rubber Lining Corporation, both in New York, N. Y.

1,634,081 Valve seat retainer. George E. Putnam, Fullerton, California.

1,634,116 Foot bearing for shoes. William H. Nickerson, Brookline, Mass.

1,634,146 Play ball covering. Beulah L. Henry, New York, N. Y.

1,634,170 Nursing bottle nipple. Archibald M. Brown, Akron, Ohio.

1,634,189 Poodle dog doll. Beulah L. Henry, assignor of one-half to Edwin A. Guinzburg, both in New York, N. Y.

1,634,203 Demountable rim. Ernst W. Nelson, Ong, Nebraska.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Dominion of Canada

June 7, 1927

271,320 Rubber band receptacle. Elias Graham, Los Angeles, California, U. S. A.

271,395 Rubber soled footwear. Getty & Scott, Ltd., Galt, assignee of George Westbrook Bell, Hamilton, both in Ontario.

June 14, 1927

271,500 Resilient surface for seats, cushions, etc. Harold Arthur Howard, London, S. W. 16, England.

271,522 Horseshoe and pad. John Alfred Paff, Allentown, Pennsylvania, U. S. A.

271,526 Weather strip. Otto H. Petersen, Oakland, California, U. S. A.

271,542 Tire filler. John William Stodders, Winnipeg, Manitoba.

271,579 Dual tire device. The Dill Manufacturing Co., assignee of Adelbert E. Bronson, both of Cleveland, Ohio, U. S. A.

June 21, 1927

271,681 Heel. Leon Bassett Conant, Cambridge, Massachusetts, U. S. A.

271,742 Decoy. Carleton Elmer Stoner, Long Beach, California, U. S. A.

June 28, 1927

272,022 Printing apparatus with resilient pad. George H. W. Bristol, Gloucestershire and George Mann & Co., Ltd., London, assignees of half of the interest, both in England.

United Kingdom

June 1, 1927

268,799† Device for stopping leaks. B. Körner and E. Pietzsch, 72 Königstrasse, Dohna, near Pirna, Saxony, Germany.

268,872 Road surface markings. H. W. S. Outram, The Woodlands, Ingatestone, Essex.

268,915 Cushions. H. A. Howard, 9, Voss Court, Streatham, London.

268,941 Boot sole. G. N. Milne, 72, Nicholas Road, Chorlton-cum-Hardy, Manchester.

269,015 Sound recording machine with rubber connections. E. Finking, 9, Prendelstrasse, Leipsic, Germany.

269,023 Pneumatic cushions. H. F. Von Seefried, Schönbrunn, Mittelfranken, Germany.

269,086 Spring floor with rubber supports. J. F. Buckley, 22, Clare Road, Levenshulme, Manchester.

269,120† Galvanic battery. C. H. Everett, Engineers' Club, London.

June 9, 1927

269,191 Inflating valve. P. Goldsmith Sons Co., assignee of W. A. Sonnet, both of Cincinnati, Ohio, U. S. A.

269,267 Reservoir pen. P. Narayan, Bijnor, United Providence, India.

269,351 Cushion tire. C. Escher, 104 Baldwin avenue, Jersey City, New Jersey, U. S. A.

269,367 Catamenial appliances. V. J. Clifford, 20, Grosvenor street, London.

269,401 Squeegee. W. E. Braham, Astley Clay Hill, Enfield, London.

269,482† Tire core. Hibbert Pneumatic Cell Tyre Co., Ltd., 277, Auburn street, Goulburn, New South Wales, Australia.

269,538† Inflating valve. G. Nernaess, Hop, near Bergen, Norway.

June 15, 1927

269,690 Slipping attachment for tire. Techno-Chemical Laboratories, Ltd., and T. Gram, 47, Victoria street, London.

269,814 Block tire. J. T., S., and H. H. Jackson, trading as S. Jackson & Sons, Hunts Bank Works, Wistaston, Crewe, Cheshire.

269,841† Filter press cloths. C. H. Caals, 18 Azaleastraat, The Hague.

June 22, 1927

269,890† Dust cap for tire valves. T. Erismann, 61 Kaufmannstrasse, Bonn, Germany.

269,958 Hot water bottle for keeping a feeding bottle hot. E. L. Furber, 35, Dale street, Liverpool.

270,033 Rubber sock. F. Pearce, 63, Queen's Gardens, Lancaster Gate, London.

270,067. Rubber feet for bedsteads. H. R. Hoskins, and Hoskins & Sewell, Ltd., both of Bordesley, Birmingham.

270,072 Invalid cushion. D. Moseley & Sons, Ltd., and G. H. W. Blick, Chapel Field Works, all of Ardwick, Manchester.

270,073 Loud speaker attachment with rubber ring. C. N. Harrison, 161, Staincliffe Road, Dewsbury, Yorkshire.

270,128 Portable urinal. V. Castana, 45, Lungotevere, Mellini, Rome.

270,134 Corrugated glove. F. C. Jones, of Reliance Rubber Co., Ltd., Formosa street, Paddington, London.

270,138 Spring mountings for automobile seats. O. Y. Imray, 30, Southampton Buildings, London.

270,156 Ground sheet pillows. J. H. Blackburn, 17, Rosebery avenue, West Bridgford, Nottinghamshire.

270,200 Toy balloon. G. Ingram, 161, Farnell Road, Old Ford, London.

270,236† Sponge rubber cleansing appliances. T. (née Otto) Bialas, 205, Hildesheimerstrasse, and A. Ebbinghausen, 3, Siebstrasse, both in Hanover, Germany.

270,256† Closures for water bottles. M. B. Reach, Springfield, Massachusetts, U. S. A.

270,306† Mudguards for wheels. L. Arnaud, 186, Blythe Road, Hammersmith, London.

270,312† Cushion tire and mudguard. A. F Fabre, 29, Rue Henri IV, Castres, France.

†Not yet accepted.

New Zealand

May 19, 1927

58,005 Tire security plate. Michelin et Cie, Clermont-Ferrand, Puy-de-Dome, France.

Germany

446,082 Hollow rubber body. Heinrich Schieferstein, Kaiser-Friedrichstrasse 1, Berlin-Charlottenburg.

446,371 Gas mask. Dr. Alexander Bernhard Drager, Moislinger Allee 53, Lubeck.

Chemical patents will be found on page 261. Machinery and Process Patents on pages 264-265.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

June 7, 1927, Act of February 20, 1905

228,548 PRINTAPRIMER—educational kindergarten devices consisting of a series of rubber stamps for letters and words arranged in rows. Arthur S. Pope, Santa Barbara, California.

228,650 TeMCo—dress shields. Jordan Marsh Co., Boston, Massachusetts.

228,662 The word: DIAMOND, through the center of which is superimposed the representation of insulated wire, above this representation the word: QUALITY CORD—insulated wire. Diamond Braiding Mills, Chicago Heights, Illinois.

228,687 "BONNIE - WEATHER"—raincoats, etc. Banks, Inc., New York, N. Y.

228,760 Circle containing the letters: "Fc", beneath the circle the word: FOOT-CRAFT—rubbers, rubber boots, arctics, etc. The C. A. Manning Shoe Co., Meriden and Waterbury, Connecticut.

June 7, 1927, Act of March 19, 1920

228,791 Oval containing the words: LA CROSSE AUTOGALOSH—overshoes and gaiters. La Crosse Rubber Mills Co., La Crosse, Wisconsin.

June 14, 1927, Act of February 20, 1905

228,850 SKELFIE—golf balls, etc. Donaldson Manufacturing Co., Ltd., Glasgow, Scotland.

228,871 POROLASTIK—elastic fabric. The Narrow Fabric Co., West Reading, Reading, Pennsylvania.

228,898 BIG 3—golf balls. Arlington Rubber Co., Everett, Massachusetts.

228,927 THE PIRATE OF THE COURSE—golf balls. The Draper-Maynard Co., Plymouth, New Hampshire.

228,950 APEX—golf ball. Druggists' Supply Corp., New York, N. Y.

228,951 GULL—golf ball. Druggists Supply Corp., New York, N. Y.

228,952 LARK—golf ball. Druggists' Supply Corp., New York, N. Y.

June 14, 1927, Act of March 19, 1920

229,028 The word: COOPER, above which are the words: CORRECT IN SIZE AND OTHERWISE—tire casings and tubes. The Cooper Corp., Cincinnati, Ohio.

June 21, 1927, Act of February 20, 1905

229,061 KOUTCHOL—oils used in the vulcanization of rubber. Technische Chemikalien—Compagnie G.m.b.H., Halle-Saale, Germany.

229,092 RAINIES—overshoes. Laura M. Radway, New York, N. Y.

229,105 DEFIANCE—pneumatic tires and inner tubes. The B. F. Goodrich Co., New York, N. Y.

229,116 DURAPLY—wide elastic webbing. The Ansonia O. & C. Co., Ansonia, Connecticut.

229,117 Oval containing the word: SILKID—trusses and suspensories. The Cincinnati Truss Co., Cincinnati, Ohio.

229,201 Square in the center of which is the representation of an eagle, above the representation the words: BLUE EAGLE, beneath the words: SUPREEM PATCH—tire patches. Beckham Tire & Rubber Co., Atlanta, Georgia.

229,237 Representation of the rising sun beneath which are the letters R C M A and the words: RAY BRAND—rubber. Naamlooze Vennootschap Rubber Cultuur Maatschappij Amsterdam, Amsterdam, Netherlands.

229,306 VUL-CAN-ITE—inner tube repair kits. The Ceylon Rubber Co., Dallas, Texas.

June 21, 1927, Act of March 19, 1920

229,344 GOLDSMITH—baseballs, tennis, golf, medicine, soccer balls, etc. The P. Goldsmith Sons Co., Cincinnati, Ohio.

June 28, 1927, Act of February 20, 1905

229,422 STABLEX—latex in natural, stabilized, diluted or concentrated form. James Barrett Crockett, New York, N. Y.

229,506 ARMOURITE—puncture sealing composition for pneumatic tires. Armourite (Laboratories), Ltd., London, England.

Dominion of Canada

Registered

June 7, 1927

41,578 Words: "ADHESO PROCESS"—belting and pulley lagging. Gutta Percha & Rubber, Ltd., Toronto, Ontario.

United Kingdom

June 1, 1927

476,952 Representation of a knight in armor, above the representation the words: KNIGHT-RYDER WEATHERPROOFS, beneath the representation the words: YE GUARANTEE OF EXCELLENCE—raincoats, etc. Elvin & Fowell, Ltd., 63, Knightrider street, London, E. C. 4.

June 8, 1927

478,809 Representation of a tiger, above the representation the words: TIGER BRAND—natural unvulcanized crepe rubber in sheets. Jeavons & Tinto, Ltd., St. Dunstan's Building, St. Dunstan's Hill, London, E. C. 3.

479,308 SATINETTE—sheeting. J. G. Ingram & Son, Ltd., The London India Rubber Works, Felstead street, Hackney Wick, London, E. 9.

June 15, 1927

480,681 EMERALD—ink and pencil eraser. Eberhard Faber, 37, Greenpoint avenue, Brooklyn, New York, U. S. A.

June 22, 1927

480,004 Word: "PARAGRIP"—India rubber solution. Alexander Ramsay, Ltd., 19, Queen street, Glasgow.

480,065 LIMIT—elastics of India rubber. Stanley Gordon Whale, W. E. Whale & Sons, 47, Milton street, London, E. C. 2.

480,547 GREENITE—insulated electric cables and conductors. The Greengate & Irwell Rubber Co., Ltd., Greengate Rubber Works, Greengate, and Irwell Works, Ordsall Lane, both in Salford.

480,680 COMET—India rubber ink and pencil erasers. Eberhard Faber, 37, Greenpoint avenue, Brooklyn, New York, U. S. A., and J. E. Evans-Jackson & Co., 57-60, Holborn Viaduct, London, E. C.

480,946 NEUTROPHASE—instruments and apparatus for use in wireless telegraphy or telephone. Redfern's Rubber Works, Ltd., Dawson and Springbank streets, Hyde, near Manchester.

Germany

991,265 Gloves for swimmers. Peter Peters, Bez. Aachen, Dremmen.

991,463 Rubber massage rollers. Weinheimer Gummi-und Guttapercha Waren-Fabrik, Weisbrod & Seifert, G.m.b.H., Weinheim.

991,920 Sponge rubber. Gummi-und Balata-Werke "Matador" A. G., Pressburg, Czecho-Slovakia. Represented by, R. H. Korn, Berlin, S.W. 11.

991,979 Exchangeable heel with attached flap. Wilhelm Lorenz, Ottostrasse 25, Gelsenkirchen.

992,010 Rubber writing-table pad. Carl Kaufmann, Frinzenstrasse 8, Dortmund.

992,137 Rubber block-belt. Continental Caoutchouc-Und Gutta-Percha-Compagnie, Vahrenwalderstrasse 100, Hannover.

992,332 Rubber cleaner for asphalt streets. Heinrich Schoerling, Richard-Wagnerstrasse 28, Hannover.

992,391 Rubber band with sprayed design, for garters, suspenders, girdles and the like. Eugen Nestler, and Curt Nestler, Annaberg i. Erzgeb.

992,392 Garter with solid rubber insert. Emma Plate, née Klink, Arndtstrasse 34, Stuttgart.

992,694 Ladies' slip-on stocking with rubber overlay in the form of galoshes on the foot part. Harburger Gummiwaren-Fabrik, Phoenix A. G., Harburg a. d. Elbe.

992,902 Mouth-piece for tobacco-pipe. Vauen Vereinigte Pfeifenfabriken vorm. Gebhard Ott und Ziener & Ellenberger A. G., Landgrabenstrasse 12 Nurnberg.

993,141 Foot bandage. Louis Brockmann, Jena.

993,173—Elastic solid tire. Franz Streit, Vikarienweg, 6, Hamburg 26.

993,270 Pneumatic tire. Dr. Paul Franke, Kommandantenstrasse 83, Berlin S. W. 19

993,457 Cover for tobacco-pipe. August Hameister, Pickhuben 4, Hamburg.

993,600 Railless electric street-car with rubber tires. Konrad Drittler, Bartkamm, Kr. Elbing, Ostpr.

993,642 Transportable, collapsible, delivery box with rubber-tired wheels. Alois Schreuers, Rcermonderstrasse 10, Aachen.

994,127 Foot bandage. Paul Wurm, Ludenscheid i. W.

994,366 Life-saving suit of rubber. Bodo von Plotho, Parey a. d. Elbe, Bez. Magdeburg.

994,589 Brush for cleaning and rubbing. Düsseldorfer Gummiwerk Theiler & Seeberger G.m.b.H., Düsseldorf-Heerdt.

Labels

United States

32,362 NO-PUNCTURE LEAK. Compound for stopping air leaks from tires. No-Puncture Leak Co., Fayette, Idaho. Published April 8, 1927.

Designs

United States

72,819 Tire. Term 3½ years. Truman S. Caldwell, assignor to Racine Horseshoe Tire Co., both of Racine, Wisconsin.

72,825 Tire. Term 3½ years. Wallace R. Gillam, Tallmadge, assignor to Lambert Tire & Rubber Co., Barberton, both of Ohio.

72,826 Tire. Term 3½ years. Wallace R. Gillam, Tallmadge, assignor to Lambert Tire & Rubber Co., Barberton, both of Ohio.

72,868 Tire. Term 14 years. Benjamin H. Pratt, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

72,925 Hot water bottle. Term 14 years. Harry A. Bauman, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

72,926 Bathing cap. Term 14 years. Harry A. Bauman and Robert M. Pierson, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

7,562 Tire. The Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ontario.

7,572 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.

7,573 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.

Prints

United States

9,892 STYLE COMFORT WEAR GOOD (WINGFOOT) YEAR WINGFOOT HEELS. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published April 20, 1927.

9,959 TOM DICK & HARRY. Boots, shoes and rubbers. Tom Dick & Harry of Mass., Inc., New York, N. Y. Published January 20, 1927.

9,971 KAKTUS KID. Blowout boots for tires. Chauncey J. Evans, doing business as Cactus Manufacturing Co., Los Angeles, California. Published March 1, 1926.

9,996 NATIONAL TIRE STORES, INCORPORATED—THE SIGN OF GOOD TIRES. Tires. National Tire Stores, Inc., Denver, Colorado. Published January 10, 1927.

DURING APRIL THE UNITED KINGDOM outstripped other countries in imports of American-made automobile casings, taking 32,771, value $426,908; followed by Argentina, with 30,364 casings, value $322,197. Other noteworthy markets were Denmark, Sweden, Brazil, the Philippines, and Germany.

Exports of Tire Repair Materials

PHILIP M. CRAWFORD
Rubber Division, Department of Commerce,
Washington, D. C.

Tire-repair materials exports, which in 1925 exceeded the million-dollar mark for the first time, in 1926 were valued at more than one and a half million dollars. This is an increase of almost 50 per cent over 1925 shipments. The percentage of increase of 1925 over 1924 was more than 100, and of 1924 over 1923 approximately 45. Exports of tire-repair materials have continued to grow much more rapidly than those of automotive rubber goods as a class. Higher tire prices during 1926 in export markets, with attendant inclination to conserve, have taught many the wisdom of repairing casings and tubes.

Our shipments to the various regions of the world have shown no startling tendencies. There has been a slight turning of the trade from Europe and the Americas toward Oceania, Asia, and Africa. Gains in these areas are largely due to a more rapid expansion of the use of motor vehicles and the consequent need of tire-repair materials than in the case of Europe and the Americas. The largest gains made on the American Continents were in South America, where automotive registration is growing rapidly. The following table shows our tire repair materials exports to the various divisions of the world:

Destination	1923 Value	1923 Per cent*	1924 Value	1924 Per cent*
Europe (total)	$138,460	38.6	$143,299	27.5
Northern Europe	34,805	9.70	37,023	7.11
Central Europe	54,125	15.09	34,827	6.68
Southern Europe	17,338	4.84	25,062	4.81
British Isles	32,192	8.97	46,387	8.90
Americas (total)	131,925	36.8	253,476	48.7
North America	45,033	12.55	84,454	16.21
Central America and Mexico	20,035	5.58	37,785	7.26
West Indies	21,455	5.97	48,577	9.33
South America	45,402	12.70	82,660	15.90
Asia (total)	21,363	5.9	41,390	7.9
Near East	1,453	.39	5,280	1.0
Middle East	4,797	1.31	12,205	2.33
Far East	15,113	4.20	23,905	4.57
Oceania (total)	47,660	13.3	56,748	10.9
Africa (total)	19,494	5.4	26,178	5.0
Grand total	$358,902	100.0	$521,091	100.0

Destination	1925 Value	1925 Per cent*	1926 Value	1926 Per cent*
Europe (total)	$360,256	32.6	$483,689	30.0
Northern Europe	57,693	5.22	97,929	6.07
Central Europe	131,847	11.94	171,727	10.65
Southern Europe	64,610	5.84	81,513	5.06
British Isles	106,106	9.60	132,520	8.22
Americas (total)	472,393	42.8	624,524	38.7
North America	185,502	16.80	162,254	10.05
Central America and Mexico	57,586	5.21	78,460	4.86
West Indies	59,519	5.39	59,123	3.66
South America	169,786	15.40	324,687	20.13
Asia (total)	77,214	7.0	136,176	8.5
Near East	21,367	1.94	16,245	1.02
Middle East	18,031	1.63	61,995	3.87
Far East	37,816	3.43	57,936	3.61
Oceania (total)	156,210	14.2	283,133	17.6
Africa (total)	37,564	3.4	84,552	5.2
Grand total	$1,103,637	100.0	$1,612,074	100.0

The figures upon which this summary is based are available in detail in Special Circular Ru-1548, Comparative Statement of United States Exports of Tire-Repair Materials, 1923-1926, obtainable from the Rubber Division.

* The percentage refers to the portion of the total exports from the United States going to these regions during the year.

UNIT VALUES OF IMPORTED GOLF BALLS

Golf balls imported into the United States during the first five months of 1927 numbered 1,270,661 as compared to 1,311,633 for the same period of 1926. Unit values for the present year have been as follows: January, $0.251 per ball; February, $0.391; March, $0.347; April, $0.406; and May, $0.40.

United Kingdom Rubber Statistics

Imports

	May, 1927 Pounds	May, 1927 Value	Five Months Ended May, 1927 Pounds	Five Months Ended May, 1927 Value
UNMANUFACTURED				
Crude Rubber				
From—				
Straits Settlements	9,598,200	£789,504	60,752,700	£4,984,111
Federated Malay States	5,508,700	452,099	29,158,300	2,378,532
British India	776,000	62,452	6,424,500	525,223
Ceylon and Dependencies	1,979,600	161,379	17,791,000	1,436,144
Other Dutch possessions in Indian Seas	2,539,000	202,310	12,069,100	988,618
Dutch East Indies (except other Dutch possessions in Indian Seas)	2,930,600	240,332	13,846,800	1,144,790
Other countries in East Indies and Pacific not elsewhere specified	344,600	28,305	1,051,600	85,371
Brazil	1,278,500	86,353	6,457,400	411,767
Peru	.....	.....	2,700	204
South and Central America (except Brazil and Peru)	1,400	99	123,600	9,112
West Africa:				
French West Africa	51,700	3,005	115,900	6,454
Gold Coast	32,600	2,560	262,300	19,195
Other parts of West Africa	80,400	5,233	691,000	54,089
East Africa, including Madagascar	76,300	6,338	644,600	49,694
Other countries	51,700	4,015	597,000	44,976
Totals	25,249,300	£2,043,984	149,988,500	£12,138,280
Waste and reclaimed rubber	702,200	£8,828	2,893,900	£47,314
Gutta percha and balata	210,800	24,861	2,461,700	222,765
Rubber substitutes	4,400	285	78,400	3,394
Totals	26,166,700	£2,077,958	155,422,500	£12,411,753
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£140,837	.....	£1,810,684
Inner tubes	.....	21,997	.....	223,782
Solid tires	.....	11,881	.....	109,607
Boots and shoes...*doz. pairs*	43,604	70,400	203,310	327,016
Other rubber manufactures	.....	145,976	.....	732,047
Totals	.....	£391,091	.....	£3,203,136

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	3,124,500	£30,664	11,955,400	£121,325
Rubber substitutes	71,100	1,627	292,400	6,761
Totals	3,195,600	£32,291	12,247,800	£128,086
MANUFACTURED				
*‡Tire and Tubes				
Pneumatic				
Outer covers	.....	£247,987	.....	£1,388,604
Inner tubes	.....	52,437	.....	299,120
Solid tires	.....	33,240	.....	162,547
Boots and shoes...*doz. pairs*	23,876	38,005	94,822	146,081
Other rubber manufactures	.....	277,558	.....	1,208,549
Totals	.....	£649,227	.....	£3,204,901

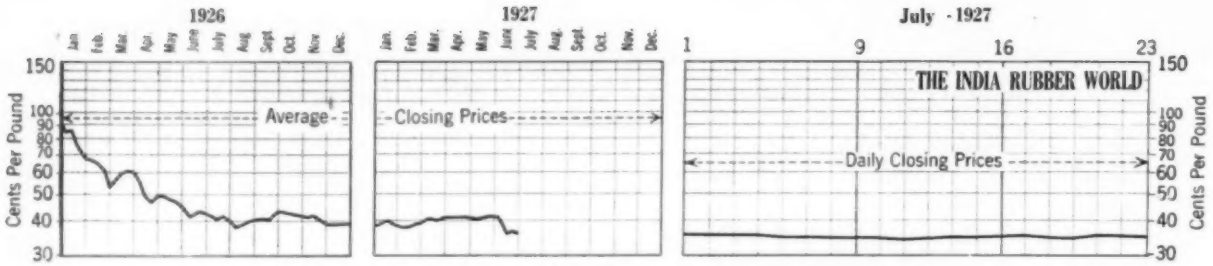
Exports—Colonial and Foreign

	May, 1927 Pounds	May, 1927 Value	Five Months Ended May, 1927 Pounds	Five Months Ended May, 1927 Value
UNMANUFACTURED				
Crude Rubber				
To—				
Russia	1,987,400	£170,615	11,992,800	£1,156,842
Sweden, Norway and Denmark	223,100	18,312	923,400	85,016
Germany	3,662,200	294,074	11,614,800	932,377
Belgium	896,100	67,439	2,385,300	181,046
France	1,473,800	121,200	7,892,800	641,195
Spain	52,200	4,166	481,000	37,496
Italy	840,500	70,170	4,433,200	387,314
Other European countries	247,300	25,366	1,379,600	125,015
United States	9,300,800	759,251	24,053,700	1,926,059
Canada	1,900	238	33,400	3,148
Other countries	76,000	7,142	341,500	31,667
Totals	18,761,300	£1,537,973	65,531,500	£5,507,175
Waste and reclaimed rubber	10,200	£486	108,700	£2,784
Gutta percha and balata	170,100	15,010	313,000	30,637
Rubber substitutes	.....	.....	6,500	240
Totals	18,941,600	£1,553,469	65,959,700	£5,540,836
MANUFACTURED				
‡*Tires and tubes				
Pneumatic				
Outer covers	.....	£26,930	.....	£283,245
Inner tubes	.....	3,166	.....	39,037
Solid tires	.....	2,514	.....	6,880
Boots and shoes...*doz. pairs*	1,116	2,370	6,942	16,103
Other rubber manufactures	.....	8,708	.....	42,105
Totals	.....	£43,688	.....	£387,370

*On and after April 12, 1927, rubber tires and tubes imported or exported with and forming part of the equipment of complete vehicles or of chassis, or fitted to wheels imported separately, are included under complete vehicles or parts, respectively.

†Motor cars, motorcycles, and parts and accessories thereof, liable to duty from September 29, 1915, until August 1, 1924, inclusive, and on and after July 1, 1925. Commercial vehicles, etc., and parts and accessories thereof were, however, exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes for motor cars and motorcycles until April 11, 1927, inclusive.

‡Included all tires and tubes prior to April 12, 1927.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York Outside Market

THE outside market maintained a state of general dullness throughout July, as regards operations by dealers and purchasers of rubber by consumers. The latter are convinced that there is in sight about 30,000 tons of rubber in excess of this year's probable consumption and that the price will be maintained around the 35-cent level by the influence of the pool as a major stabilizing factor.

In view of these prospects, manufacturers find it good policy to restrict their commitments to actual nearby needs. Doubtless, many factories have their usual stocks for 60 to 90 days at about the present market level, although an occasional company is still handicapped with higher priced rubber contracted for early last year. The current price level of 35 cents, is above that originally named under restriction as yielding a fair return to the rubber growers, and if stabilized should leave no reasonable cause of complaint on the part of rubber manufacturers. Dealers consider that no substantial advancement in crude rubber is liable to take place until consumers begin to show active interest in January-March futures.

The trend of ribbed smoked sheets from July 1 to July 25 closely resembled that from June 1 to June 25. During each of these periods the price held for about a week at the high for the month, then dropped off for about two weeks before regaining again the starting level which in the case of the June market was 40 cents and in July, 35½ cents. The net drop of ribs in the two months' period was 4½ cents.

Consumption of rubber is continuing at a steady and heavy tonnage. Tire production in the Akron district was reported June 20 as 154,000 daily, which equals the peak rate of August, 1926. The outlook for heavy tire output in August thus seems assured, as production is generally well maintained. Production in mechanical rubber goods, footwear and other lines is proceeding at normal rates.

The market of the week ended July 2 was rather dull, and prices fairly steady, due to the buying support of the pool. There was little real incentive to trade due to the pre-holiday influence and to the desire to even up commitments.

During the week ended July 9 conditions showed no change and the market because extremely dull. There was very little factory business and that only in small near-by lots. The effect of the mid-year inventory period had not passed. The large stocks of visible rubber reassured consumers and deprived the market of their active interest. The general opinion was bearish and lower prices were expected. Plenty of shipment rubber was offered but only the cheapest lots were picked up for immediate turn-over.

The week terminated July 16, witnessed the conditions still unchanged. Factories remained outside taking up only occasional small lots to advantage. Dealers, also, were looking for cheap offers and made very few bids.

The market of the week ended July 23 was rather quiet. The foreign markets were holding prices fairly steady and little rubber was being offered except at firmer prices. Factory buying was small in amount. As a whole, the market seemed mixed and uncertain. The price fluctuations were small. On July 18 ribs were 35⅛ cents, on July 22, 35⅜ cents, the high of the week from which level they dropped in two days to 35 cents on July 25.

During the entire month first latex crepe held at ¼ cent a pound over ribbed smoked sheets. Paras continued quiet and dull and balatas were almost completely neglected but with ample supplies offered.

Importations of all grades in June were 33,194 tons, compared with 30,107 tons one year ago. Plantation arrivals for June were 31,444 tons, compared with 27,915 tons one year ago. Total importations of plantation rubber for six months ended June 30, were 212,108 tons, compared with 194,977 tons for the corresponding period of 1926. Total importations of all grades of rubber for the six months ended June 30 were 226,850 tons, compared with 208,637 tons for the corresponding period of 1926.

RUBBER AFLOAT TO THE UNITED STATES

Week Ended	British Malaya	Ceylon	East Indies	London and Liverpool	Totals
July 2	5,141	646	837	988	7,612
July 9	3,646	371	651	830	5,498
July 16	4,062	438	1,968	1,380	7,848
July 23	3,005	845	1,201	1,705	6,756

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	June, 1927				July, 1927																			
Sheet	27	28	29	30	1	2†	4*	5	6	7	8	9	11	12	13	14	15	16	18	19	20	21	22	23
Ribbed smoked	36⅝	35¾	35¾	35⅝	35½	....	....	35⅛	34⅞	34⅞	34⅝	34⅝	34⅝	34⅜	34½	34⅜	34⅝	35	35⅛	34⅞	34⅞	35⅛	35⅛	35
Crepe																								
First latex	36⅞	36	36	35⅞	35¾	....	....	35⅛	35	34⅞	34⅜	34⅜	34¾	34⅜	34½	34⅝	34⅝	35	35⅛	34⅞	35	35⅛	35⅛	35
No. 2 blanket	33⅜	33	33	32⅞	32¾	....	....	32⅛	31⅞	31½	31¼	31¼	30⅝	30⅝	30⅞	31	31¼	31⅜	31¾	31½	31⅝	32⅛	32⅛	32
No. 3 blanket	33⅛	32½	32½	32¼	32⅛	....	....	31⅝	31¼	31	30¾	30¾	30⅛	30⅛	30¼	30½	30⅝	30⅞	30⅞	30⅞	31⅛	31⅛	31½	31⅜
No. 4 blanket	32⅜	31⅞	31⅞	31⅝	31⅝	....	....	31	30⅝	30¼	30¼	30¼	29⅜	29¾	29⅜	29⅜	29⅝	30	29⅞	29⅝	30⅛	31	30½	30⅝
Thin clean brown	33⅜	32¾	32⅝	32⅜	32⅛	....	....	32¼	31½	31¼	31¼	31⅛	30¾	30⅛	30¾	30⅝	30⅞	31¼	31⅛	31¼	31⅛	31½	31⅜	31½
Rolled brown	31⅝	30½	30⅝	30¼	30¼	....	....	29½	29	28⅞	28⅝	28⅜	28⅛	28⅛	28	28	28⅛	28⅜	28¼	27⅞	27⅞	28¾	28¼	28⅛
Off latex	36⅛	35½	35½	35⅛	35⅛	....	....	34⅝	34½	34⅜	34⅛	34⅝	34⅛	34⅛	34⅛	34¼	34⅛	34½	34⅜	34¼	34⅜	35	34⅝	34½

* Holiday. † No market.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago and July 25, the current date:

Plantation Hevea	July 26, 1926	June 25, 1927	July 25, 1927
Rubber latex (Hevea)....gal.	$1.80 @	$1.50 @	$1.50 @
CREPE			
First latex spot	.41 @.41½	.37 @	.35⅝ @.35¼
August	.41 @.41½	.37 @.37⅛	.35¼ @
August-September	.41¼ @.41¾	.37¼ @	.35¼ @
October-December	.42¼ @.43	.37⅜ @.37½	.35½ @
January-March	.43 @.43½	.38 @	.36 @
Off latex, spot	.40½ @.41	.36½ @.36¾	.34¼ @
Amber No. 2, spot	.39 @.40	.33½ @.34	.32 @
August	.39 @.40	.34 @	.32 @
August-September	.39 @.40	.34 @	.32 @
October-December	.39 @.40	.34½ @	.32¼ @
January-March	.39½ @	.34½ @	.32½ @
Amber No. 3, spot	.38 @.39	.32½ @	@
Brown, thin, clean	.38 @.39	.32 @	.31 @
Brown, specky	.37½ @	.31½ @	@
Brown, roll	.35½ @.36	.30 @	.28 @
Sole crepe	.65 @	@	@
Sheet			
Ribbed, smoked spot	.40½ @.41	.36½ @.36¾	.34⅞ @.35
August	.40¾ @.41¼	.36½ @	.35 @
August-September	.41 @.41½	.36⅞ @	.35⅛ @
October-December	.42 @.42½	.37½ @	.35¼ @.35½
January-March	.42½ @.43	.37¼ @	.35½ @.35¾
East Indian			
PONTIANAK			
Banjermassin	.16 @	.09¾ @	.09¾ @
Pressed block	.25 @	.16 @	.16 @
Sarawak	.16½ @	.09¾ @	.09¾ @
South American			
PARAS			
Upriver, fine	.41 @	.31 @	.30¾ @
Upriver, fine	*.54 @	*.42 @	*.40¼ @
Upriver, medium	@	.26 @	@
Upriver, coarse	.23½ @	.21 @	.20¾ @
Upriver, coarse	*.40 @	*.34 @	*.31 @
Islands, fine	.39 @	.39 @	.28 @
Islands, fine	.41 @	*.40 @	*.37½ @
Acre, Bolivian, fine	.41½ @	.32 @	.31 @
Acre, Bolivian, fine	*.55 @	.43 @	*.40½ @
Beni, Bolivian	.41¾ @	.32 @	.31 @
Madeira, fine	.41½ @	.31 @	.30½ @
Peruvian, fine	.36 @	.30½ @	.28½ @
Tapajos, fine	.37½ @	.30 @	.28 @
CAUCHO			
Upper Caucho ball	.23½ @	.22 @	.21 @
Upper Caucho ball	*.41 @	*.34 @	*.31 @
Lower Caucho ball	.23 @	.19½ @	.19 @
Maniçobas			
Ceará negro heads	†.35 @	.22 @	.22 @
Ceará scrap	†.18 @	.12 @	.12 @
Manicoba, 30% guarantee	†.34 @	.21 @	.21 @
Mangabiera, thin sheet	†.38 @	.21 @	.21 @
Centrals			
Central scrap	.22 @.23	.22½ @	.19½ @.20
Central wet sheet	.15 @.16	.17 @	.16 @.17
Corinto scrap	.22 @.23	.22 @	.19½ @.20
Esmeralda sausage	@	.22 @	.19½ @.20
Guayule			
Duro, washed and dried	.33 @	.30 @	.30 @
Gutta Percha			
Gutta Siak	.29 @.30	.22 @	.22 @.22½
Gutta Soh	.26 @	@	@
Red Macassar	3.00 @	3.20 @	2.50 @3.00
Balata			
Block, Ciudad Bolivar	.60 @	.37 @	.34 @.36
Colombia	.45 @	.36 @	.34 @.35
Manaos block	@	.41 @	.25 @.27
Panama	.45 @	.36 @	.33 @.34
Surinam, sheet	.82 @	.60 @	.54 @.57
amber	.85 @	.64 @	.58 @.60
Chicle			
Honduras	‡.64 @	‡.68 @	‡.67 @
Yucatan, fine	‡.65 @	‡.68 @	‡.67 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Low and High New York Spot Prices

Plantations	1927*	July 1926	1925
First latex crepe	$0.34¼ @$0.35⅜	$0.39½ @$0.42¼	$0.78 @$1.22
Smoked sheet, ribbed	.34¼ @ .35⅜	.40¼ @ .42	.81 @ 1.23
PARAS			
Upriver, fine	.29½ @ .31	.37¾ @ .41	.76 @ 1.13½
Upriver, coarse	.19½ @ .21	.23 @ .28½	.60 @ .74
Islands, fine	.26½ @ .28	.35 @ .39	.70 @ .96
Cametá	....	....	.39 @ .53

*Figured to July 23, 1927.

London

July began with the market weak through lack of buying support. A decline in the price of standard ribbed smoked sheets set in which carried the seller's price down from 17⅛ pence on July 1 to 16½ pence on July 12, in a succession of dull sessions. On the last named date an upward reaction began and although the price became firmer advancing only ⅜ pence to 16⅞ pence from July 11 to July 16. In the week from July 18 to July 23 the market opened very active at 17 pence and by mid-week the price receded and became very firm at 16⅞ pence. For the remainder of the week the price was steady at 17¼ pence.

The rumors circulating a month ago to the effect that the government contemplated the abolition of the Stevenson restriction scheme, or a change in the pivotal price, were denied by Mr. Amery, the Colonial Secretary, who said in the Parliament: "There are no grounds for the rumor to which my honorable friend refers. If any change in the scheme were to become necessary, I should certainly endeavor to give as long notice as possible."

At their monthly meeting, the Council of the Rubber Growers' Association passed a resolution as follows: In view of the repeated press statements discrediting the rubber restriction scheme, the Council of the Rubber Growers' Association consider it advisable to state publicly that in their opinion the scheme saved the British plantation rubber industry from disaster, and has operated for the benefit not only of producers, but also of manufacturers and consumers throughout the world. In the opinion of the Council of the Rubber Growers' Association any uncertainty as to the continuance of the scheme reacts detrimentally upon all sections of the rubber industry, and they wish to record their satisfaction at Mr. Amery's recent announcements on the subject.

Unused Coupons

Concerning the matter of unused coupons the following is of interest, being quoted from Symington & Sinclair's Market Report of June 30, 1927: The official statement as issued June 22 by the Malay States Information Agency gives the figure of rubber exported from the restriction area during the month of May as 21,512 tons. The credits issued in May are given as 48,285 tons and the estimate of the balance of unutilized export credits carried forward to June is stated as 40,529 tons. This latter figure has led to some misunderstanding.

Under the Malayan system of working quarter by quarter most of the licenses for the May-July quarter are issued in May. The official figure of standard production for the restriction area is 333,840 tons per annum. One quarter of this is 83,460 tons. Exportable quota is now at 60 per cent of standard so that the total licenses to be issued to cover the May-July quarter would amount to 50,076 tons. Of this 48,285 tons appeared to have been issued in May, leaving 1,791 tons to be issued during June and July.

The licenses carried over at the end of April were officially estimated as 13,591 tons, licenses issued in May were 48,285 tons, making a total available for the May-July quarter of 61,876 tons. Against this, shipments amounted as above stated, to 21,512 tons, leaving unused 40,364 tons. This figure does not quite agree with the official figure of 40,529 tons, probably owing to the fact that the figures for credits issued in the very small area of Trengganu, which exports only about 150 to 200 tons per month, are not included.

The position at the end of May appears to have stood as follows:

	Tons
Actual credits in existence to cover June and July shipments	40,529
And still to be issued for the quarter.....about	1,800
Total	42,329

This means that for all practical purposes old credits will be entirely out of the way by the end of July. There must always be a certain small balance carried forward in the same manner as any trader must always have some stock in hand, however small.

London stocks declined 16,667 tons between June 25 and July 23. The weekly record is as follows: July 2, 63,917 tons; July 9, 64,163 tons; July 16, 63,511 tons; July 23, 62,819 tons.

Singapore

The market for July opened dull at 16⅞ pence with downward tendency. The bottom was reached at 16¼ pence on July 9 after which it reacted upward to 16⅞ pence on July 14. In the week following the spot price moved up steadily under active demand and scarcity of offerings from 16¾ pence on July 18 to 17 pence on July 23 when 17 pence was reached and the market became irregular and dull, opening at 16¾ pence, weak and dull on July 25.

The Rubber Exchange of New York, Inc.

High and low fluctuations of the July market show a spread of about one cent a pound for all positions. The high for July being 36.5 cents and the low 34.5 cents. Trading from June 27 to July 23 inclusive resulted in the sale of 8,914 contracts, equivalent to 22,285 tons. This tonnage represents a large percentage increase over any preceding month and followed as a prompt result from the adoption, July 11, of sweeping reductions in the rates of commissions for both members and non-members. The new rates are approximately 40 per cent lower than the old. The amended by-law became effective immediately and reads as follows:

On each contract bought or sold for a resident of the United States or Canada, not a member of the Exchange, $15 instead of $25.

On each contract bought or sold for a person residing outside of the United States or Canada, not a member of the exchange, $20 instead of $30.

For members of the exchange in the United States or Canada, $7.50 instead of $12.50.

For foreign members of the exchange, $12.50 instead of $17.50.

For each contract bought or sold by one member of the exchange for another giving up his principal on the day of the transaction, $1.00 instead of $1.25.

Regarding the changed rates of commission, President Henderson stated as follows:

The proposed changes represent a desire to have the Rubber Exchange serve the public in a broader sense than it now does. With the United States consuming 70 per cent of the world's production of rubber, none of which is grown in this country, it is all important that the Exchange should make its facilities available for the widest use by all branches of the rubber industry, both for their protection and that of the consuming public as well.

It is my belief that the proposed amendment should stimulate a broad interest on the part of the public and undoubtedly will induce a large number of rubber manufacturers here and producers abroad to take advantage of the facilities offered by the exchange for insurance against extreme price fluctuations by hedging, as it is commonly called.

A great deal of interest has been evinced in the Exchange by manufacturers, many of whom constantly use its facilities, but the old rate of commission put the cost of this service relatively high. It is in an effort to lighten this burden that the change in the by-laws was made. While the reductions may seem drastic, they are the result of several months' earnest study and consideration, and I believe their adoption will be in the best interests of both the public and the exchange.

President Henderson recently expressed the following views in a survey on restriction:

The British restriction enactment has had a very serious setback, due to the surplus of unused coupons and the rather high basis for production this year. A falling market has followed the minimum export allowance of 60 per cent. We suspect that strong pressure is being brought to bear in the Colonial Office in London to review the basis of assessment of many estates and this may easily bring about a decided reduction in shippable quantities for the balance of the year.

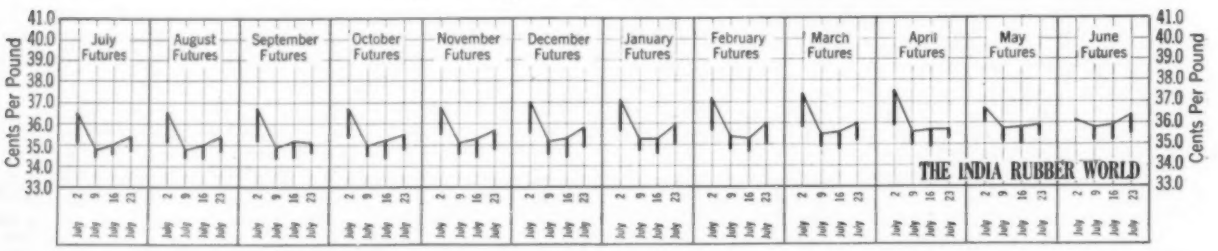
If the British authorities desire a price of around 21 pence to prevail for rubber and if the intention of the restriction act was to keep the price consequently in the neighborhood of a 40 cent level, the ways and means will be found to correct the situation now existent that has dictated a recent level around 17 pence. Under the terms of the restriction enactment revision of assessment is permissible at any time in the discretion of the controller of exports.

The recent drop in the market has been thoroughly natural in view of the increased supplies and there is nothing in the immediate outlook to justify a reaction upward.

ZINC CARBONATE

The usefulness of zinc carbonate in certain classes of rubber compounds is steadily gaining wider recognition. It replaces oxide of zinc wherever an accelerator activator is needed in pure gum stock without altering the color or transparency of the stock. It is, therefore, useful for all classes of nipples, dental dam, water bottles, etc., of the transparent variety. Zinc carbonate has been used successfully in the production of vulcanized crepe soling where the natural color must be retained.

New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound



The Rubber Exchange of New York, Inc.

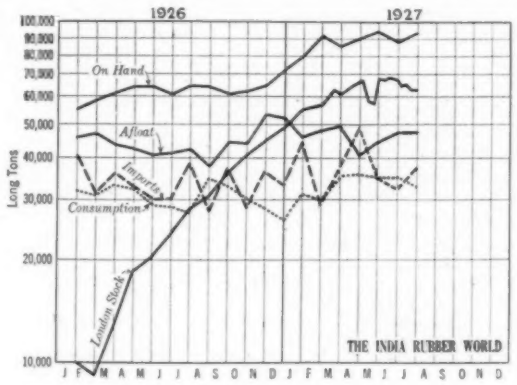
Daily Market Futures—Ribbed Smoked Sheets—Closing Prices—Cents Per Pound

	June				July																	
	27	28	29	30	1	2‡	4*	5	6	7	8	9	11	12	13	14	15	16	18	19	20	21	22	23
July...	36.5	35.5	35.5	35.4	35.1	...	...	34.8	34.7	34.5	34.6	34.5	34.6	34.3	34.3	34.6	34.5	35.0	35.0	34.8	34.7	35.4	34.8	34.7
Aug...	36.6	35.7	35.5	35.4	35.1	...	...	34.8	34.6	34.6	34.6	34.4	34.5	34.4	34.4	34.5	34.5	35.0	35.0	34.8	34.8	35.4	35.0	34.7
Sept..	36.7	35.5	35.6	35.4	35.2	...	...	34.9	34.6	34.7	34.5	34.4	34.5	34.4	34.5	34.5	34.7	35.2	35.0	34.8	34.9	35.4	35.1	34.7
Oct...	36.7	35.6	35.6	35.4	35.4	...	...	35.0	34.7	34.8	34.6	34.5	34.5	34.4	34.4	34.6	34.7	35.2	35.0	34.8	35.0	35.5	35.2	34.8
Nov...	36.8	35.8	35.8	35.5	35.5	...	...	35.1	34.7	34.8	34.7	34.6	34.6	34.4	34.5	34.6	34.8	35.3	35.1	34.8	35.0	35.7	35.3	35.0
Dec...	37.0	36.1	35.9	35.6	35.6	...	...	35.2	34.8	35.0	34.7	34.6	34.7	34.4	34.5	34.7	34.9	35.3	35.2	34.9	35.1	35.8	35.4	35.1
1928																								
Jan...	37.1	36.3	36.0	35.7	35.7	...	...	35.3	35.0	35.0	35.0	34.7	34.8	34.6	34.6	34.7	35.0	35.3	35.4	35.0	35.1	35.9	35.5	35.2
Feb...	37.2	36.4	36.1	35.8	35.7	...	...	35.4	35.1	35.1	35.1	34.8	34.8	34.7	34.7	34.8	35.0	35.3	35.4	35.0	35.3	36.0	35.5	35.2
Mar...	37.4	36.5	36.2	36.0	35.8	...	...	35.5	35.2	35.2	35.1	34.9	34.9	34.8	34.8	34.9	35.1	35.6	35.5	35.2	35.4	36.0	35.6	35.4
April..	37.5	36.6	36.3	36.1	35.9	...	...	35.6	35.3	35.3	35.2	35.0	35.0	34.9	34.9	35.1	35.2	35.7	35.6	35.3	35.5	36.2	35.7	35.5
May..	37.6	36.7	36.6	36.2	36.0	...	...	35.7	35.4	35.4	35.3	35.1	35.1	35.0	35.0	35.2	35.3	35.8	35.7	35.4	35.5	36.3	35.9	35.6
June..	...	...	...	...	36.1	...	...	35.8	35.5	35.5	35.4	35.2	35.2	35.1	35.1	35.3	35.4	35.9	35.8	35.5	35.7	36.4	36.0	35.7

*Holiday. ‡No market.

Imports, Consumption and Stocks

The accompanying graph covers the crude rubber supply, consumption and stocks for 1926 and the first seven months of 1927. Stocks on hand in the United States advanced 4,500 tons in July to a total of 93,750 tons August 1. The imports for July are estimated at 37,000 tons, a gain of 4,000 tons over the imports for June. Consumption in July is estimated at 32,500 tons or 1,300 tons less than that in June. London stocks between June 25 and July 23 showed three periods of decrease and one of increase. On July 23 they were 62,819 tons, a net decrease of 1,667 tons from June 25.



U. S. Imports, Consumption, Stocks, 1926-27

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

1925	Imports Tons	Consumption Tons	Stocks On Hand† Tons	Stocks Afloat† Tons	London Tons	Singapore and Penang Tons†
Twelve months...	384,837	389,136	51,000*	48,000*	.....	.....
1926						
Twelve months...	411,900	358,415	72,510*	52,019*	.....	.....
1927						
January	45,736	31,500	76,171	45,218	54,786	26,443
February	29,446	29,000	76,000	48,000	56,962	26,766
March	39,500	36,100	91,086	49,597	63,167	27,844
April	48,700	35,900	92,800	39,000	67,034	24,543
May	36,569	34,590	94,600	44,200	56,668	25,133
June	33,194	33,800	89,250	47,233	64,486	21,898
July 23 (estimated)	37,000	32,500	93,750	47,000	62,819	.....

* December 31, 1925 and 1926.
† The first of each month.

Ceylon Rubber Exports from Jan. 1 to April 26, 1927

	Tons
To United Kingdom	5,111.09
Continent	775.26
Australia	456.15
America	13,787.11
Egypt	3.00
Africa	32.36
India	12.98
Japan	55.61
Total	20,233.56
For the same period last year	17,261.19

CEYLON ANNUAL EXPORTS, 1921-1926

	Tons
For the year 1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

Plantation Rubber Exports from Malaya*

January 1 to May 31, 1927

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	3,771.72	5,201.04	4,009.68
British Possessions	1,727.29	44.60	34.70
Continent of Europe	5,002.82	947.90	1,276.46
United States	70,383.90	12,795.58	5,201.61
Japan	4,670.48	1,316.00	1,185.10
Other Countries	31.90	.....	.....
Totals	85,588.11	20,305.12	11,707.55

* Excluding all foreign transhipment.

Reclaimed Rubber Market

Reclaiming plants are operating at full capacity The consumers are in many instances ordering supplies ahead of schedule and in no case are they cancelling orders. In practically all lines reclaims are being purchased on the basis of current and nearby needs. Manufacturers are taking no chances of suffering loss by being caught overstocked. The economy of reclaims is beyond question with rubber at the present market. Their working and aging qualities are an advantage in every rubber goods line.

The quotations given below compared with those one month ago show a distinct narrowing of the spread for each grade but comparatively few reductions in price otherwise.

New York Quotations

July 25, 1927

	Specific Gravity	Price Per Pound
Auto Tire		
Black	1.21	$0.08 @$0.08½
Black, washed	1.18	.10 @ .10¼
Black selected tires	1.20	.09 @ .09¼
Dark gray	1.35	.12 @ .12½
Light gray	1.38	.13 @ .13½
White	1.40	.15 @ .15½
High Tensile		
Super-reclaim, No. 1 Black	1.20	.17 @ .17½
No. 2 Black	1.20	.14 @ .14½
High tensile red	1.20	.14 @ .14½
Shoe		
Unwashed	1.60	.08 @ .08¼
Washed	1.50	.10¼ @ .10¾
Tube		
No. 1	1.00	.17 @ .17¼
No. 2	1.18	.12½ @ .13
Miscellaneous		
Red	1.35	.14 @ .14½
Truck tire, heavy gravity	1.55	.07½ @ .07¾
Truck tire, light gravity	1.40	.08 @ .08¼
Mechanical blends	1.60	.07 @ .08

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that the amount of rubber exported from British Malaya during the month of June last totaled 32,607 tons. The amount of rubber imported was 14,706 tons, of which 11,473 tons were declared as wet rubber. The following are comparative statistics:

	1926 Gross Exports Tons	1926 Foreign Imports Tons	1927 Gross Exports Tons	1927 Foreign Imports Tons
January	30,452	10,237	34,946	14,995
February	30,440	8,306	27,528	11,697
March	35,012	14,800	41,346	17,462
April	23,727	10,565	29,041	13,069
May	31,231	10,604	31,393	15,491
June	30,624	11,764	32,607	14,706
Totals	181,486	66,276	196,861	87,420

Note—The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of May and June, 1927:

	May, 1927 Tons	June, 1927 Tons
United Kingdom	6,423	6,551
United States of America	21,879	22,112
Continent of Europe	1,694	2,222
British Possessions	458	593
Japan	924	1,120
Other foreign countries	15	9
Totals	31,393	32,607

WORLD CENSUS OF MOTOR VEHICLES

A world census of the number of motor vehicles in use throughout the world, as of January 1, 1927, has been recently completed by the Automotive Division, Departments of State and Commerce. According to this estimate, there are approximately 27,650,267 automobiles in use in the world, the total including 23,518,928 passenger cars, 194,374 buses, and 3,936,965 trucks. Motorcycles to the number of 1,726,241 are not included in the survey. Of this grand total of 27,650,267 vehicles, the United States accounts for 22,137,334, or about 80 per cent.

The Market for Rubber Scrap

The continuance of lack of interest and the steady low prices for crude rubber are reflected in the slow hand-to-mouth condition of the rubber scrap market. Tire and other scrap collections are fair. Something over half of the grades quoted remain unchanged in price over quotations of a month ago. On the remainder moderate reductions are made.

AIR BRAKE HOSE. The demand for air brake hose has fallen off to fair. The price shows less spread between the high and low figures.

BOOTS AND SHOES. The market on all shoe grades is quiet due in part to the reduced call for shoe reclaim, particularly in the topping division of the industry.

INNER TUBES. The demand for inner tubes has fallen off slightly and quotations have dropped from 7 to 9 per cent.

MECHANICAL GRADES. These are less in demand. Quotations on most grades are well maintained on the levels of a month ago.

TIRES. On pneumatic grades prices are easier. Collections continue fair. Consumption by the reclaimers is well maintained. Solid tires are dull and quoted slightly lower than last month.

Quotations for Carload Lots

July 25, 1927

Boots and Shoes			
Boots and shoes, black	*lb.*	$0.01¼ @	$0.01⅞
Red and white	*lb.*	.00½ @	.01
Trimmed arctics, black	*lb.*	.00½ @	.00⅞
Untrimmed arctics	*lb.*	.00¾ @	.00⅞
Tennis shoes and soles	*lb.*	.01 @	
Hard Rubber			
No. 1 hard rubber	*lb.*	.10 @	.10½
Battery jars, black compound	*lb.*	.01⅞ @	.02
Inner Tubes			
No. 1, floating	*lb.*	.06½ @	.07
No. 2, compounded	*lb.*	.04¼ @	.04⅞
Red	*lb.*	.05½ @	.05¾
Mixed tubes	*lb.*	.04½ @	.04¼
Mechanicals			
Mixed black scrap	*lb.*	.00¼ @	.00⅞
Heels	*lb.*	.00½ @	.00¾
Hose, air-brake	*ton*	25.00 @	26.50
regular soft	*ton*	15.00 @	17.00
No. 1 red	*lb.*	.01¾ @	.01⅞
No. 2 red	*lb.*	.01 @	
White, druggists' sundries	*lb.*	.03½ @	
Mechanical	*lb.*	.01½ @	.01¾
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	*ton*	22.00 @	23.00
Beadless	*ton*	31.50 @	32.50
White auto tires with beads	*ton*	40.00 @	42.00
Beadless	*ton*	50.00 @	52.00
Mixed auto peelings	*ton*	30.00 @	32.00
Solid—			
Mixed motor truck, clean	*ton*	25.00 @	26.00

LATIN-AMERICAN PLANTING EXPERIMENTS

The Latin-American countries are evincing considerable interest in projects for rubber cultivation, according to reports made by the Department of Commerce. For example, the government of Ecuador has granted, for 6,000 sucres, to the Sociedad Anomina de Explotacion Agricola Occidental a tract of land comprising 20,000 hectares in the region between the Quinidi and Blanco rivers. On this territory the joint stock company above mentioned intends to plant rubber and other tropical crops, and also to build suitable roads. Experimental plantings of rubber, as well as other tropical produce, are also being made by the Guatemala Plantations, Ltd., the company owning a tract of 320,000 acres on the Pacific Coast of Guatemala between Cahmperico and San Jose. Tests are to be made as to methods of rubber cultivation and planting, soil suitability, etc., the organization having secured about 20,000 Hevea seeds from Mexico and British Honduras. Still another rubber planting project is reported from Bolivia, where a grant is said to have been made at La Paz to a group having American backing to the extent of $4,000,000.

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	April, 1927		Four Months Ended April, 1927	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	103,493,197	$37,321,505	343,603,411	$125,878,497
Balata	47,602	19,752	363,660	130,611
Jelutong or Pontianak	1,868,799	266,101	5,805,532	957,984
Gutta percha	325,519	66,880	1,111,484	229,966
Guayule	1,099,987	271,402	3,728,875	909,209
Rubber scrap	1,987,424	119,589	8,250,886	364,587
Totals	108,822,528	$38,065,229	362,863,848	$128,470,854
Chicle *dutiable*	1,034,626	$537,599	6,054,396	$3,028,655
MANUFACTURED—*dutiable*				
Rubber belting	45,451	$28,498	236,734	$145,844
Rubber tires	918	15,423	1,398	27,452
Other manufactures of rubber	.....	122,703	.....	481,506
Totals	46,369	$166,624	238,132	$654,802

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	3,528,613	$1,428,425	18,626,315	$8,400,121
Balata	9,400	3,435	34,889	14,072
Gutta percha and rubber substitutes and scrap	17,816	1,119	40,301	3,246
Rubber manufactures	.....	47,658	.....	148,183
Totals	3,555,829	$1,480,637	18,701,505	$8,565,622

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
India Rubber				
Reclaimed	2,014,671	$178,457	6,901,145	$716,973
Scrap and old	2,450,333	155,128	8,683,500	555,666
Footwear				
Boots *pairs*	45,128	118,607	161,642	439,078
Shoes *pairs*	89,182	71,870	329,851	279,747
Canvas shoes with rubber soles *pairs*	599,998	384,265	1,822,217	1,236,610
Rubber water bottles and fountain syringes *number*	26,412	17,614	96,108	59,936
Rubber gloves *doz. pairs*	5,627	18,828	22,531	76,008
Other druggists' rubber sundries	.....	39,293	.....	146,368
Bathing caps *doz.*	25,879	52,731	80,709	161,654
Hard rubber goods				
Electrical hard rubber goods	70,063	15,856	447,314	107,329
Other hard rubber goods	.....	25,590	.....	101,928
Tires				
Casings, automobile *number*	271,365	3,479,268	929,772	11,650,829
Tubes, automobile *number*	156,946	301,229	508,715	1,041,521
Other casings and tubes, *number*	6,577	24,373	15,335	48,172
Solid tires for automobiles and motor trucks *number*	8,766	278,675	41,425	1,260,257
Others	139,007	41,140	379,872	109,107
Tire accessories	.....	187,842	.....	546,232
Rubber and friction tape	142,747	43,134	568,868	152,296
Belting	479,506	249,771	1,637,435	879,041
Hose	629,592	254,498	2,306,765	901,510
Packing	233,721	109,670	816,811	378,307
Soles and heels	318,535	101,651	1,525,874	496,827
Thread	166,891	213,313	513,860	658,325
Rubber bands and erasers	95,300	67,051	280,395	207,729
Other rubber manufactures	.....	218,190	.....	830,047
Totals	.....	$6,648,044	.....	$23,041,497
Rubber toys and balls	.....	$9,452	.....	$59,371
Rubber balloons *gross*	57,272	$76,764	187,677	$241,223

Imports of Crude Rubber Into the United States by Customs Districts

	*May, 1927		Five Months Ended *May, 1927	
	Pounds	Value	Pounds	Value
Massachusetts	4,127,747	$1,648,653	21,542,878	$8,034,438
St. Lawrence	.....	.....	6,864	2,265
Buffalo	22,071	8,065	23,948	9,024
New York	68,533,432	25,998,740	379,205,212	139,821,811
Philadelphia	223,960	71,433	615,990	206,599
Maryland	3,446,587	1,237,955	6,685,147	2,395,642
New Orleans	.....	.....	2,057	227
Los Angeles	2,618,669	988,803	10,579,758	3,873,005
San Francisco	764,260	305,382	3,076,867	1,197,837
Oregon	89,833	35,125	560,219	218,588
Washington	56,000	22,400	56,000	22,400
Dakota	.....	.....	28	10
Michigan	.....	.....	910	325
Ohio	1,636,990	563,590	2,386,282	832,847
Colorado	280,000	104,231	660,800	247,856
Totals	81,799,549	$30,984,377	425,402,960	$156,862,874

*Including Latex Dry Rubber Content.

Compounding Ingredients Market

THE high level of tire production is being well maintained. In fact, it is reported that the current output in the Akron district has never been exceeded. In mechanical lines operation is on at least a fair tonnage basis. Thus the consumption of compounding ingredients affords a large and steady demand on stocks. Pig lead dropped to a new low record since July, 1923, causing slight reduction in litharge and other lead products.

ACCELERATORS. The generally active production in the rubber industry maintains a good demand for both semi-ultra and super accelerators. Safex is a new super-accelerator for curing at 10 pounds of steam. The tendency to adopt low temperature curing is becoming well established and aids the demand for super-accelerators.

ANTI-OXIDANTS. The general use of anti-oxidants is thoroughly well established. Neazone is the latest addition to the list of anti-oxidants for providing age resistance to vulcanized rubber products.

BENZOL. Stocks of benzol increased beyond consuming capacity owing to the demand for other incidental by-products from coke oven operation. Excessive stocks are causing a somewhat unsettled condition of prices.

CARBON BLACK. Consuming demand is strong if somewhat routine and prices are steady.

LITHARGE. A drop in pig lead the past month resulted in a reduction of 25 cents per 100 pounds on litharge about the middle of the month, since which time the price has been unchanged and consumption in the rubber trade routine.

LITHOPONE. The movement of lithopone is not active but goods are taken as needed. Consumers are covered by contract to the end of the year.

MINERAL RUBBER. Since the use of mineral rubber was strongly stimulated by the advance in crude two years ago the demand has continued to grow and the material moves in increasing tonnage and is becoming as basic as reclaim although not approaching it in tonnage.

SOLVENT NAPHTHA. Consumption does not match production but the price remains steady despite that fact.

STEARIC ACID. It is fair to say that the use of this material is enlarging because the distinct benefits from its use are so easily observed and appreciated by the rubber workers.

ZINC OXIDE. This standard ingredient is found in every rubber plant as a standard and indispensable ingredient. Under these conditions it is in routine, rather than sensational, demand, at all times.

New York Quotations

July 25, 1927

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09	@
Lead, red	lb.	.09¼	@
sublimed white	lb.	.08¼	@
sublimed blue	lb.	.08¼	@
super-sublimed white lead	lb.	.08¾	@
Lime, R. M. hydrated	ton	12.80	@
Litharge	lb.	.08¾	@
Magnesia cal., light	lb.	.15	@
calcined, extra light	lb.	.25	@
calcined, heavy	lb.	.04	@
magnesium, carb., light		.06	@ .06½
Orange mineral A.A.A	lb.	.11¾	@

Accelerators, Organic

A-7	lb.	.65	@ .85
A-11	lb.	.70	@ .95
A-16	lb.	.65	@ .85
A-19	lb.	.70	@ .95
Aldehyde ammonia	lb.	.65	@ .70
Crylene, hard form	lb.		@
Paste	lb.		@
Di-ortho-tolylguanidine	lb.	.90	@
Diphenyl guanidine	lb.	.72	@
Ethylidine aniline	lb.	.60	@ .65
Formaldehyde aniline	lb.	.38	@ .42
P. A. C.	lb.	.09½	@ .10
Grasselerator 102	lb.	.65	@ .70
552	lb.	4.80	@ 5.00
808	lb.	1.05	@ 1.35
Heptene	lb.		@
Hexamethylene tetramine	lb.	.65	@ .70
Lithex	lb.		@
Methylene dianiline	lb.	.40	@
Monex	lb.		@
No. 999 lead oleate	lb.	.16½	@
Phenyl orthotolyl guanidine	lb.	.76½	@ .81
Piperidine pentamethylene dithio carbamate	lb.	4.80	@ 5.00
R. & H. 40	lb.	.50	@ .55
50	lb.	.50	@ .55
Safex	lb.		
Tensilac No. 39	lb.	.55	@ .60
No. 41	lb.	.65	@ .70
Thionex	lb.	3.25	@
Thiocarbanilid	lb.	.26	@ .28½
Trimene	lb.		@
base	lb.		@
Triphenylguanidine	lb.	.65	@ .70
Vulcanex	lb.	.86	@
Vulcanol	lb.	1.08	@
Vulcano	lb.	.74	@
Z-88	lb.	.75	@ 1.00

Acids

Acetic 28% (bbls.)	100 lbs.	3.37½	@
glacial (carboys)	100 lbs.	12.41	@
Oleic	lb.	.09½	@ .10
Stearic	lb.	.13½	@ .14
Sulphuric, 66%	100 lbs.	1.60	@

Alkalies

Caustic soda, solid	lb.	.029	@

Anti-Oxidants

Antox	lb.	$0.83	@
Neozone	lb.	.74	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.05	@ .21
Carbon (see Comp. Ing.)			
A. & W. nonfil No. 1	lb.	.40	@
No. 2	lb.	.25	@
Drop	lb.	.06	@ .10
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Du Pont, N	100 lbs.	1.35	@
Marine, A. C.	100 lbs.	1.30	@
5 R	100 lbs.	1.00	@
2 G	100 lbs.	.90	@
Prussian	lb.	.33	@ .35
Ultramarine	lb.	.08	@ .35

BROWN

Sienna, Italian	lb.	.04	@ .08

GREEN

A. & W. green	lb.	1.25	@ 3.00
Chrome, light	lb.	.27	@ .31
medium	lb.	.29	@ .32
dark	lb.	.31	@ .34
Du Pont, A. C.	100 lbs.	3.00	@
4 G	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Oxide of chromium	lb.	.38	@

ORANGE

Du Pont, 2 R	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@

RED

A. & W. red	lb.	.75	@ 3.50
purple	lb.	2.00	@ 4.00
Antimony, golden, No. 40	lb.	.22	@ .25
No. 60	lb.	.16	@ .20
golden 15/17%	lb.	.16	@ .20
T. K. "Special" 1%	lb.	.38	@
Pentasulphide 15/17%	lb.	.18	@
Antimony,			
Crimson, R.M.P. No. 3	lb.	.48	@
Sulphur free	lb.	.52	@
T. K. 15/17%	lb.	.40	@

Colors—*(Continued)*

7-A	lb.	$0.35	@
Z-2	lb.	.20	@
Vermilion, No. 5	lb.	.50	@ .55
No. 15	lb.	.37½	@ .42
Du Pont R. I.	100 lbs.	2.00	@
6 B.	100 lbs.	1.10	@
Brilliant A. C.	100 lbs.	1.05	@

Iron Oxides

bright pure domestic	lb.	.12	@
bright pure English	lb.	.14	@
bright reduced English	lb.	.10½	@
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.10½	@ .11
Indian (maroon), reduced English	lb.	.09½	@ .10
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.04	@
Venetian reds	lb.	.02	@ .06
Vermilion, English quicksilver	lb.	1.85	@ 1.95

WHITE

Lithopone	lb.	.05½	@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05½
Sterling	lb.	.05¾	@ .06¼
Zinc Oxide			
AAA (lead free)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06⅝	@ .07⅛
Z (8% leaded)	lb.	.06⅝	@ .07⅛
French Process			
Green seal	lb.	.10¼	@
Red seal	lb.	.09¼	@
White seal	lb.	.11⅞	@

YELLOW

A. & W. yellow	lb.	2.00	@ 4.00
T. K. sulphide	lb.	.65	@
Cadmium sulphide	lb.	1.50	@
Chrome	lb.	.16	@ .18
Du Pont N.	100 lbs.	4.00	@
R. R.	100 lbs.	1.55	@
Grasselli cadmium	lb.	1.50	@
Ochre, domestic	lb.	.05½	@ .07
imported	lb.	.03	@ .03¼
Oxide, pure	lb.	.10½	@
Zinc imported	lb.	.24	@

New York Quotations

July 25, 1927

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	$21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate powd.	lb.	.12	@
lump	lb.	.11	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	52.00	@
dust	lb.	.05	@ .06
sulphate, dry	lb.	.03½	@ .04
Barytes, imported	ton	27.00	@36.00
water ground and floated	ton	34.00	@35.00
dry ground, white	ton	16.00	@
dry ground, off color	ton	12.00	@
No. 1 Missouri, water ground and floated, St. Louis	ton	22.20	@23.00
Basofor	lb.	.04½	@
Blanc fixe, dry	ton	85.00	@90.00
pulp	ton	60.00	@63.00
Carbon Black			
Aerfloted arrow	lb.	.09	@ .13
Compressed	lb.	.07½	@ .11½
Uncompressed	lb.	.07	@ .11
Micronex	lb.	.08	@ .12
Carrara filler	ton	26.00	@
Chalk	ton	12.00	@
Clay china	lb.	.01¼	@
Mineral flour (Florida)	ton	20.00	@23.00
Perfection	ton	14.00	@
Suprex	ton	13.00	@26.00
Cotton flock, black	lb.	.10½	@
light-colored	lb.	.10½	@
white	lb.	.11	@ .27
Fossil flour	lb.	.02¼	@
Glue, high grade	lb.	.22	@ .26
low grade	lb.	.18	@ .22
Infusorial earth	lb.	.02¼	@
Mica, amber (fact'y)	ton	80.00	@
Pumice stone, powd.	lb.	.02¼	@ .04
Rotten stone (bbls.)	lb.	.02½	@ .04½
Soap bark	lb.	.13	@ .14
Soapstone	ton	15.00	@22.00
Stearex	lb.	.10	@ .14
Talc, domestic	lb.	.01¼	@
French	ton	18.00	@22.00
Velvetex	lb.	.04	@ .07

Compounding Ingredients—*(Continued)*

Whiting:			
Commercial	100 lbs.	$0.83	@$1.00
English, cliffstone	100 lbs.	1.50	@
Snow white	ton	12.00	@23.00
Westminster Brand	100 lbs.		@
Witco (c.l.) (fact'y)	ton	12.00	@
Whiting, imp. chalk	100 lbs.	1.10	@ 1.50
Paris White, Eng. Cliff	100 lbs.	1.75	@ 3.00

Factice

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .15
White	lb.	.10	@ .16½

Mineral Rubber

Genasco (facty.)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Hydrocarbon, sott	ton	28.00	@34.00
Ohmlac Kapack, M. R.	ton	60.00	@
M-4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	41.00	@43.00
M. R. granulated	ton	51.00	@53.00
Robertson, M. R. solid (facty.)	ton	34.00	@80.00
M. R. gran. (facty.)	ton	34.00	@80.00

Oils (Softeners)

Castor, No. 1, U. S. P.	lb.	.13	@
No. 3, U. S. P.	lb.	.12	@
Corn, crude (bbls.)	lb.	.10	@
Cotton	lb.	.09	@ .10½
Cycline	gal.	.28	@ .34
Degras	lb.	.04¾	@ .05
Fluxrite fluid	lb.	.05	@ .06
solid	lb.	.05	@ .06
Glycerine	lb.	.26	@ .26½
Linseed, raw	lb.	.11	@ .12
Palm lagos (bbls.)	lb.	.09½	@
niger (bbls.)	lb.	.09	@
Peanut, crude	lb.	.12	@
refined	lb.	.15	@
Petrolatum, standard	lb.	.05¾	@
Pine, steam distilled	gal.	.72	@
Plastone	lb	.39	@
Rapeseed, refined	gal.	.80	@
Rosin	gal.	.55	@ .62
Tackol	lb.	.09	@ .15

Resins and Pitches

Pitch	bbl.	$9.50	@$10.50
Rosin, K (bbl.)	280 lbs.	10.75	@
Shellac, fine orange	lb.	.70	@
Tar, retort	bbl.	16.50	@17.00

Solvents

Benzol (90%, 7.21 lbs. gal.) pure	gal.	.29	@
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.05½	@ .06¼
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.07½	@ .08
Gasoline No. 303			
Tankcars	gal.	.16	@
Drums, c. l.	gal.	.25	@
Drums, l. c. l.	gal.	.27	@
Naphtha	gal.	.10¼	@ .14
Turpentine, spirits	gal.	.66½	@ .67½
wood, steam distilled	gal.	.64	@ .66

Vulcanizing Ingredients

Sulphur			
Velvet flour	100 lbs.	2.60	@ 3.50
Soft rubber (c.l.)	100 lbs.	2.60	@ 2.95
(l.c.l.)	100 lbs.	2.95	@ 3.30
Superfine commercial flour (c.l.)	lb.	2.20	@ 2.55
(l.c.l.)	lb.	2.60	@ 3.10
Tire brand, superfine	100 lbs.	2.20	@ 2.55
Tube brand, velvet	100 lbs.	2.60	@ 2.95
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.55	@
carnauba	lb.	.38	@ .50
ceresine white	lb.	.12	@
montan	lb.	.07	@ .07½
ozokerite, black	lb.	.27	@
green	lb.	.28	@
Paraffin			
122/124 white crude scale	lb.	.03	@
124/126 white crude scale	lb.	.03	@
120/122 fully refined	lb.	.05½	@
125/127 fully refined	lb.	.05¾	@

PELINITE

Pelinite is a mineral recently tested as a reinforcing material for rubber. The commercial material is remarkably fine, a sample showing 99.95 per cent passing through a 325 mesh screen. Systematic tests of pelinite in comparison with several well known rubber compounding clays show results extremely favorable to this new material. Tensiles were recorded at 30, 45 and 60 minute cures at 40 pounds of steam respectively at 3,252, 3,610 and 3,682 pounds per square inch with elongations of 665, 650 and 650 per cent respectively. The material is evidently of interest for use in tires and mechanical rubber goods where superior tensile properties are essential.

ANTI-OXIDANT IN OILS

The value of anti-oxidants in rubber goods has been fully demonstrated to the great advantage of that industry, whether from the point of view of manufacturer, dealer or consumer. Similarly anti-oxidants are now proving invaluable for preventing oxidation of oils in a variety of industries. In fact, they preserve every animal, vegetable or mineral oil alike against the deteriorating influence of oxygen. The saving thus effected is extremely important in those industries where large amounts of oil are stored or used. For example, in the use of oils for quenching steels in tempering or heat treatment; in electrical transformers; impregnating oils for paper insulated cables; and for structural steel paint preservation, etc.

Anti-oxidants exert in oils an effect similar to that attributed to them in rubber, due probably and largely to catalytic action. They improve their electrolytic properties of resistivity and power loss factor by several hundred per cent. In fatty oils they reduce rancidity and other effects of oxidation. Where oils are subjected to high temperatures long sustained as is the case with oils for cable impregnation, they prevent waste by maintaining their fluidity for an increased period.

CHEMICAL EXPOSITION OFFERS STUDENT COURSES

One of the unusual features of the Eleventh Exposition of Chemical Industries, to be held in New York, September 26 to October 1, 1927, is the offering of students' courses on the fundamentals of chemical engineering and industrial chemical practice. The classes will be divided into two sections, the first comprising those students who have had some training and experience in chemical engineering, and the other those who have not had such opportunities. Lectures are to be given by well-known scientists as well as by men of prominence in certain American industries.

The exposition, as a whole, is attracting both domestic and foreign interest, and practically all the space has been sold on three floors of the Grand Central Palace, New York City, where the displays will be held.

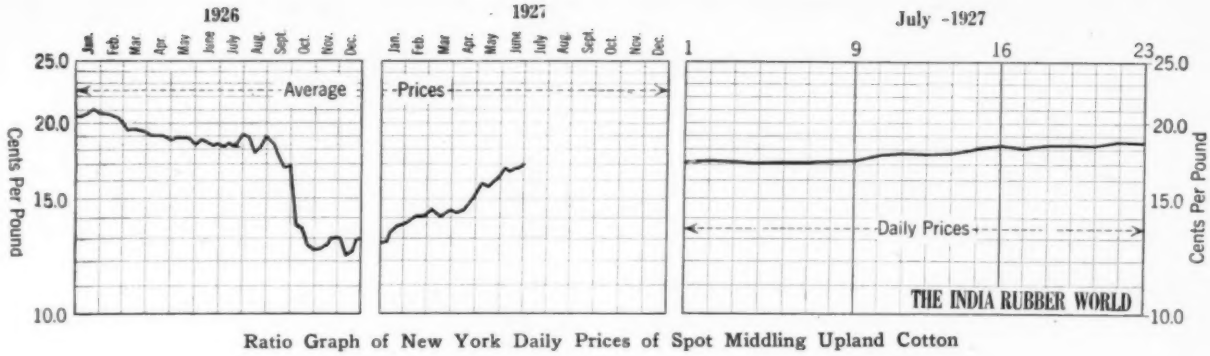
PIGMENTAR

The term "pigmentar" is the trade designation for three consistencies of standardized pine tar prepared for use as softeners for rubber compounding. These tars are produced by retort distillation and have the following gravities at 60 degrees F. and specific viscosities at 25 degrees C. by the Stormer viscosimeter.

	Gravity	Viscosity
Thin	1.065	75
Medium	1.075	275
Heavy	1.085	3,500

Compared by distillation range practically nothing distils from these grades below 170 degrees C. indicating absence of turpentine and similar oils. Thin tar distils 85 per cent between 178 and 335 degrees C., at which point it breaks down. Similarly the initial and breaking down points for medium tar are 178 and 338 degrees C. with loss of 75 per cent. For hard tar the corresponding points are 211 and 346 degrees C. with loss of 60 per cent.

Other characteristics of these tars are their freedom from soda soaps and very slight acid reaction in alcoholic or acetone solution.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

Market for Cotton and Fabrics

AMERICAN COTTON. The price for spot middling cotton has continued to rise since the beginning of the year. July 1 the price was 17.10 cents with a gradual advance to July 8 when it was 17.15 cents. From that level a sharp rise set in carrying the price up by 20 to 30 point stages to 18.35 cents on July 19. The stimulus for this increase was derived chiefly from the government report of acreage under cultivation as of July 9. Owing chiefly to the damage of the river floods in the Mississippi Valley the acreage of the new crop is reported as being 42,680,000 acres, a reduction over 1926 of 12.4 per cent. This reduction was greater than that expected and in consequence, with continued wet weather in the Atlantic states occurring about the time of the report the price of spot advanced with marked activity. The spread of the boll weevil infestation aroused increased fears of the crop and aided in strengthening the continued upward movement.

Forecasts of the size of the 1927 crop indicate that it will not greatly exceed 14,225,000 bales at the average production per acre of the past 13 years which was 161 pounds.

June consumption by American mills was the impressive total of 662,000 bales and serves to indicate an unprecedentedly large consumption for this season. The total, exclusive of linters, may possibly approximate 16,250,000 bales of American cotton which practically disposes of the huge crop of last season and assures a strong statistical position for the market.

EGYPTIAN COTTON. Egyptians have recently risen very abruptly during July. Uppers are now being offered at around 30 cents and Sakel 10 cents higher. This sharp advance is very largely pure speculation based on exaggerated reports of damage done by worms in Egypt and to the general belief in that country that the crop of American staples will be very greatly reduced. There is no questioning the fact that the acreage in Egypt has been reduced but information from reliable sources indicates that the crop in that country is doing well.

The fact that equivalent American staples are selling at several cents a pound cheaper than Egyptians is certainly not a bullish argument for the latter. Whatever levels Egyptian prices may reach next fall it would seem now that the recent advance in Alexandria has been too rapid.

Lately there has been heavy buying of Soudans, both in England and on the Continent but this demand has come chiefly from fine spinners who require something better than Sakels and to whom price is a secondary consideration. As a matter of fact Soudan cotton has been sold well below equivalent grades of Egyptians.

PIMA COTTON. Pima grades are offered at considerable discounts under Sakels but the spinners of the world are not prepared as yet to pay present asking prices.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. An outstanding feature is the strong cotton market showing sharp advances from day to day and an attempt in fabrics to attain a parity with the staple.

New York Quotations

July 25, 1927

Drills

38-inch	2.00-yard	*yard*	$0.16½ @
40-inch	3.47-yard		.09½ @
52-inch	1.90-yard		.18½ @
52-inch	2.20-yard		.15⅝ @
59-inch	1.85-yard		.18⅝ @
60-inch	1.52-yard		.22½ @

Ducks

38-inch	2.00-yard S. F.	*yard*	.17 @
40-inch	1.45-yard S. F.		.23½ @
72-inch	1.05-yard D. F.		.33½ @
72-inch	16.66-ounce		.36½ @
72-inch	17.21-ounce		.37½ @

MECHANICAL

Hose and belting		*pound*	.31½ @
Specials			@

TENNIS

52-inch	1.35-yard	*yard*	.25½ @

Hollands

RUBBER TRADE SPECIAL
R. T. 3 A.

31-inch		*yard*	.20 @
40-inch			.25 @
50-inch			.45 @

RED SEAL

36-inch			.14½ @
40-inch			.15 @
50-inch			.22½ @

GOLD SEAL

40-inch, No. 72			.19 @
40-inch, No. 80			.20½ @

Osnaburgs

40-inch	2.35-yard	*yard*	$0.14⅜ @
40-inch	2.48-yard		.13⅞ @
40-inch	3.00-yard		.11⅜ @
37-inch	2.42-yard		.14 @

Raincoat Fabrics

COTTON

Bombazine 60 x 64		*yard*	.10¾ @
Bombazine 60 x 48			.09¾ @
Plaids 60 x 48			.11¾ @
Plaids 48 x 48			.10¾ @
Surface prints 60 x 48			.11¾ @
Surface prints 64 x 60			.12¾ @
Print cloth 38½-inch, 64 x60			.07⅝ @

Sheetings, 40-inch

48 x 48, 2.50-yard		*yard*	.12⅛ @
48 x 48, 2.85-yard			.10¾ @
64 x 68, 3.15 yard			.11⅝ @
56 x 60, 3.60-yard			.09¾ @ .10
48 x 44, 3.75-yard			.08⅛ @ .08½

Sheetings, 36-inch

48 x 48, 5.00-yard		*yard*	.06⅞ @ .07
44 x 40, 6.15-yard			.05¾ @ .05⅞

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded		*pound*	$0.54 @
Peeler, karded			.44 @ .45

BUILDER 23/11

Peeler, karded			.44 @ .45

CORD 23/3/3

Egyptian, combed		*pound*	.60 @
Egyptian, karded			.55 @
Peeler, karded, 1 1/32-in.			.45 @

CORD 23/4/3

Peeler, karded		*pound*	.46 @ .47

CORD 23/3/3

Peeler, karded		*pound*	.47 @

CORD 15/3/3

Peeler, karded		*pound*	.42 @ .42½

CORD 13/3/3

Peeler, karded		*pound*	.41 @ .42

LENO BREAKER

8-oz. Peeler, karded		*pound*	.42 @
10-oz. Peeler, karded			.42 @

CHAFER

9.5-oz. Peeler, karded		*pound*	@
12-oz. Peeler, karded			@
14-oz. Peeler, karded			.42 @

Better values seldom or never have been passed out to the cotton goods trade than now. Many buyers realize this and are daily giving evidence of their growing interest in the engagement of supplies for forward months while sellers and producers are inclined to be reluctant.

RAINCOAT FABRICS. The raincoat business has been a little more active the last few weeks and it is thought that the fall business will be larger this year than ever.

SHEETING. The outstanding feature of the market so far this year has been the continued demand on all grades of cotton-goods. There has been no large speculation on the part of buyers but they have been placing orders for liberal amounts due to their heavy requirements. The cotton goods market today is in a very healthy state, prices are generally recognized as being reasonable.

TIRE FABRICS. The leading feature of the tire fabric market is that in view of the uncertainties of the new crop buyers are not purchasing very far ahead with the result that sellers have not much business on their books and therefore are over anxious and in some instances are cutting prices below the cost of production. Cotton has advanced so radically that if the advances continue tire fabric prices will have to be increased materially. Production of fabric has been on a very satisfactory basis so far this year.

The Cotton Outlook

Special Cotton Week

At a special cotton week program recently conducted under the auspices of the University of Texas, at Austin, Dr. John A. Todd, principal of the School of Commerce, Liverpool, England, in his remarks to the large delegation of cotton experts in attendance, is quoted as follows:

"If America will guarantee England a steady supply of cotton from year to year, the British Empire will not make efforts to grow cotton in competition with America, but will merely supplement American cotton with cotton grown in India, Nigeria and other Colonial possessions."

He warned, however, that a continuation of a fluctuating crop with fluctuating prices would cause the British Empire to extend its efforts to produce competitive cotton saying that Nigeria and Uganda could produce cotton more cheaply because of great amount of low price labor available and could thus easily compete with America. This can be done even with 12 cent cotton grown here, he added.

Dr. Todd blamed the shortage of American cotton supply in 1920 to 1923 as the reason why Britain decided to grow its own cotton in its Colonial possessions.

Cotton textile production during the first six months of this year was 40.8 per cent greater than during the first six months of 1927, according to the Association of Cotton Textile Merchants of New York, and mill reports show that with the possible exception of last June, sales were in excess of production. The trade of the world in cotton goods is better, as a whole, than since the war and merchants are not holding stocks of cotton goods.

Reduction in Cotton Acreage

The estimate of the cotton acreage under cultivation as of July 1, issued by the Department of Agriculture July 9 was 42,680,000 acres, a reduction of 12.4 per cent. This reduction is slightly more than was generally expected and its correctness is more or less questioned, but on the basis of one-third of a bale to the acre these official figures would indicate a crop of 14,700,000 bales or 162 pounds to an acre. The average yield of the past 13 years was 161 pounds to an acre. Last year it was 181.9 pounds.

On account of the conditions that have prevailed it appears that a bumper crop is practically impossible. A fair yield is possible with perfect weather in the eastern states from now on, and a short yield if it is unfavorable. The recent advances in cotton prices would seem to be justified by conditions.

Cotton Consumption

Cotton consumption in June aggregated 662,630 bales, the highest June on record, it is shown by figures announced today by the Census Bureau. Consumption in June, 1926, was 518,607 bales. Both cotton growing states and New England shared in this increase.

Cotton on hand June 30, was 1,607,676 bales in consuming establishments, compared to 1,268,707 a year ago, and in public storage and at compresses 2,164,108 bales compared to 2,410,261 on June 30, 1926.

These figures include 26,069 Egyptian, 9,655 other foreign, and 1,299 American-Egyptian consumed; 57,728 Egyptian, 18,418 other foreign and 4,842 American-Egyptian in consuming establishments; and 14,721 Egyptian, 6,332 other foreign and 2,213 American-Egyptian in public storage.

For the 11 months ended with June, consumption aggregates 6,633,474 bales this year compared to 5,994,109 in the corresponding period last year.

Cotton Research in Germany

The development of research work on cotton in the United States and England is well known but similar activities in other countries have received scant attention. The organization, scope and work of the different institutions in Germany interested in cotton research were outlined by Dr. Krais of the Dresden Institute in a paper read at a recent meeting of the Textile Institute in Manchester, England.

In 1917 a number of the leaders of the German textile industry decided to develop scientific research. Their idea was to make use of those textile materials which could be grown or manufactured within the country and to utilize foreign textile materials as economically and as well as possible, eventually using them over and over again.

A number of research institutes were formed mostly at places where textile schools were already established. The work of each institute is organized to study those fibers that specially interest the textile industry of the section in which it is located.

The Dresden Institute was founded in 1917 to promote science in all parts of the textile industry. It was primarily a private organization but had the support of the Saxon government. The work is under the guidance of a group of scientists instead of one directing head. This fact was responsible for the success of the work.

The work of the Institute is divided into three general classes: (1) investigations, analytical work, testing work, etc., of a short character; (2) larger problems given to the Institute for investigation by industrial works or individuals; (3) research problems which the scientists regard as value for solution.

The results of their work were published in the *Textile Forchung* until 1922. Since then they have been published in the *Leipziger Monatschrift*.

Cotton Notes

The Secretary of Agriculture has announced a revision of regulations for the movement of cotton and cotton products from certain parts of Texas, New Mexico and Arizona, on account of the pink boll worm and *thurberia* weevil infestations. The important change in the restrictions on the interstate movement is the addition of the requirement that cotton lint from these areas in future shall be compressed as well as disinfected.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
JUNE 14. By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	54
JUNE 15. By "London Commerce," Europe.	
Littlejohn & Co., Inc.	710
JUNE 16. By "City of Madras," Far East.	
H. A. Astlett & Co.	168
Bowring & Company	56
Littlejohn & Co., Inc.	238
JUNE 16. By "Larchbank," Far East.	
H. A. Astlett & Co.	815
General Rubber Co.	1,539
Adolph Hirsch & Co., Inc.	10
Littlejohn & Co., Inc.	2,228
The Meyer & Brown Corp.....pkgs.	609
H. Muehlstein & Co., Inc.	984
Poel & Kelly, Inc.	277
Raw Products Co.	270
Charles T. Wilson Co., Inc.	400
JUNE 16. By "Pres. Adams," Far East.	
H. A. Astlett & Co.	573
Baird Rubber & Trading Co., Inc.	725
Paul Bertuch & Co., Inc.	175
General Rubber Co.	4,324
Haldane Bierrie & Co., Inc.	700
Littlejohn & Co., Inc.	4,164
The Meyer & Brown Corp.....pkgs.	1,470
H. Muehlstein & Co., Inc.	163
Charles T. Wilson Co., Inc.	198
JUNE 17. By "Mahseer," Far East.	
General Rubber Co.	1,132
JUNE 17. By "Pipestone County," Bordeaux.	
Hood Rubber Company	†79
JUNE 19. By "Transylvania," Europe.	
General Rubber Co.	414
JUNE 20. By "American Banker," London.	
The Meyer & Brown Corp.....pkgs.	71
JUNE 20. By "Carmania," Europe.	
General Rubber Co.	68
Charles T. Wilson Co., Inc.	331
JUNE 20. By "Minnekahda," London.	
Haldane Bierrie & Co., Inc.	264
H. Muehlstein & Co., Inc.	267
JUNE 21. By "Ryndam," Far East.	
H. A. Astlett & Co.	102
General Rubber Co.	194
JUNE 24. By "Elveric," Far East.	
General Rubber Co.	40
Haldane Bierrie & Co., Inc.	200
Littlejohn & Co., Inc.	246
The Meyer & Brown Corp.....pkgs.	50
H. Muehlstein & Co., Inc.	75
Charles T. Wilson Co., Inc.	56
JUNE 24. By "Missouri," London.	
Baird Rubber & Trading Co., Inc.	206
Hood Rubber Co.	†906
JUNE 25. By "Albert Ballin," Far East.	
H. Muehlstein & Co., Inc.	53
JUNE 26. By "City of Dunkirk," Far East.	
H. A. Astlett & Co.	1,623
Baird Rubber & Trading Co., Inc.	754
Paul Bertuch & Co., Inc.	100
General Rubber Co.	3,794
Haldane Bierrie & Co., Inc.	61
Hood Rubber Co.	†589
Littlejohn & Co., Inc.	1,760
Meyer & Brown, Inc.....pkgs.	183
The Meyer & Brown Corp.....pkgs.	1,303
H. Muehlstein & Co., Inc.	546
Poel & Kelly, Inc.	205
Raw Products Co.	101
Rogers Brown & Crocker Bros., Inc.	465
Charles T. Wilson Co., Inc.	867
JUNE 27. By "Jeanette Skinner," Hamburg.	
Hood Rubber Co.	†222
JUNE 27. By "Lancastria," London.	
Baird Rubber & Trading Co., Inc.	244
General Rubber Co.	3,111
Littlejohn & Co., Inc.	186
Charles T. Wilson Co., Inc.	330
JUNE 27. By "Minnewaska," Europe.	
Baird Rubber & Trading Co., Inc.	84
Littlejohn & Co., Inc.	709
H. Muehlstein & Co., Inc.	148
JUNE 27. By "Rotterdam," Far East.	
General Rubber Co.	553
Littlejohn & Co., Inc.	135
JUNE 29. By "Kasenga," Far East.	
H. A. Astlett & Co.	240
General Rubber Co.	106
Littlejohn & Co., Inc.	224
JUNE 30. By "Fres. Garfield," Far East.	
H. A. Astlett & Co.	1,730
Baird Rubber & Trading Co., Inc.	550
Paul Bertuch & Co., Inc.	50
General Rubber Co.	5,278
Haldane Bierrie & Co., Inc.	50
Hood Rubber Co.	†750
Littlejohn & Co., Inc.	2,869
The Meyer & Brown Corp.....pkgs.	430
The Meyer & Brown Corp.....pkgs.	†224
H. Muehlstein & Co., Inc.	572
Poel & Kelly, Inc.	500
Rogers Brown & Crocker Bros., Inc.	525
Charles T. Wilson Co., Inc.	112
JULY 1. By "Silvercedar," Far East.	
H. A. Astlett & Co.	882
Baird Rubber & Trading Co., Inc.	770
General Rubber Co.	6,907
Haldane Bierrie & Co., Inc.	508
Littlejohn & Co., Inc.	2,484
The Meyer & Brown Corp.....pkgs.	622
Poel & Kelly, Inc.	†100
Poel & Kelly, Inc.	178
Rogers Brown & Crocker Bros., Inc.	†100
Rogers Brown & Crocker Bros., Inc.	415
Charles T. Wilson Co., Inc.	1,833
JULY 2. By "Maidan," Far East.	
General Rubber Co.	1,015
JULY 3. By "Kendal Castel," Far East.	
H. A. Astlett & Co.	1,381
Baird Rubber & Trading Co., Inc.	610
General Rubber Co.	7,665
Haldane Bierrie & Co., Inc.	70
Littlejohn & Co., Inc.	2,975
The Meyer & Brown Corp.....pkgs.	530
H. Muehlstein & Co., Inc.	581
Poel & Kelly, Inc.	378
Rogers Brown & Crocker Bros., Inc.	1,201
Charles T. Wilson Co., Inc.	2,105
JULY 4. By "Adriatic," London.	
Baird Rubber & Trading Co., Inc.	55
H. Muehlstein & Co., Inc.	71
JULY 4. By "American Shipper," Europe.	
General Rubber Co.	12,076
JULY 4. By "Burgerdyk," Europe.	
Littlejohn & Co., Inc.	72
JULY 4. By "De Grasse," Europe.	
General Rubber Co.	50
JULY 4. By "Tuscania," London.	
Baird Rubber & Trading Co., Inc.	310
Littlejohn & Co., Inc.	721
Charles T. Wilson Co., Inc.	63
JULY 4. By "West Islip," Far East.	
Poel & Kelly, Inc.	*100
JULY 5. By "Minnesota," London.	
Baird Rubber & Trading Co., Inc.	212
General Rubber Co.	7,550
The Meyer & Brown Corp.....pkgs.	512
Charles T. Wilson Co., Inc.	351
JULY 5. By "Vechtdyk," Far East.	
H. A. Astlett & Co.	2,983
Baird Rubber & Trading Co., Inc.	183
Paul Bertuch & Co., Inc.	67
General Rubber Co.	6,192
Haldane Bierrie & Co., Inc.	917
Hood Rubber Co.	742
Littlejohn & Co., Inc.	1,839
Meyer & Brown, Inc.....pkgs.	161
The Meyer & Brown Corp.....pkgs.	675
H. Muehlstein & Co., Inc.	1,019
Poel & Kelly, Inc.	814
Raw Products Co.	350
Rogers Brown & Crocker Bros., Inc.	1,435
Charles T. Wilson Co., Inc.	1,195
JULY 7. By "Eumaeus," Far East.	
H. A. Astlett & Co.	1,408
Baird Rubber & Trading Co., Inc.	2,200
General Rubber Co.	6,263
Haldane Bierrie & Co., Inc.	770
Hood Rubber Co.	†280
Littlejohn & Co., Inc.	3,541
The Meyer & Brown Corp.....pkgs.	456
H. Muehlstein & Co., Inc.	1,386
Poel & Kelly, Inc.	160
Rogers Brown & Crocker Bros., Inc.	800
Charles T. Wilson Co., Inc.	362
JULY 9. By "Japanese Prince," Far East.	
H. A. Astlett & Co.	765
Baird Rubber & Trading Co., Inc.	300
General Rubber Co.	6,951
Haldane Bierrie & Co., Inc.	807
Littlejohn & Co., Inc.	2,117
The Meyer & Brown Corp.....pkgs.	1,395
The Meyer & Brown Corp.....pkgs.	†404
H. Muehlstein & Co., Inc.	1,072
Poel & Kelly, Inc.	215
Rogers Brown & Crocker Bros., Inc.	1,502
Charles T. Wilson Co., Inc.	1,492
JULY 9. By "Volendem," Far East	
H. Muehlstein & Co., Inc.	100
JULY 10. By "Barbadian," London.	
Baird Rubber & Trading Co., Inc.	†101
Hood Rubber Co.	†129
JULY 10. By "Caronia," London.	
Baird Rubber & Trading Co., Inc.	273
General Rubber Co.	8,027
Charles T. Wilson Co., Inc.	971
JULY 10. By "Deli," Far East.	
H. A. Astlett & Co.	2,092
General Rubber Co.	5,621
Haldane Bierrie & Co., Inc.	280
Hood Rubber Co.	†151
Littlejohn & Co., Inc.	3,205
The Meyer & Brown Corp.....pkgs.	942
H. Muehlstein & Co., Inc.	1,313
Poel & Kelly, Inc.	595
Raw Products Co.	21
Rogers Brown & Crocker Bros., Inc.	1,185
Charles T. Wilson Co., Inc.	1,897
JULY 11. By "Celtic," Far East.	
H. A. Astlett & Co.	10
The Meyer & Brown Corp.....pkgs.	61
JULY 12. By "Minnetonka," London.	
H. A. Astlett & Co.	23
Baird Rubber & Trading Co., Inc.	916
JULY 14. By "Fres. Harrison," Far East.	
Baird Rubber & Trading Co., Inc.	1,650
General Rubber Co.	1,745
Haldane Bierrie & Co., Inc.	300
Hood Rubber Co.....bales	†118
Littlejohn & Co., Inc.	1,399
H. Muehlstein & Co., Inc.	930
Poel & Kelly, Inc.	1,000
Rogers Brown & Crocker Bros., Inc.	1,250
Charles T. Wilson Co., Inc.	106
JULY 14. By "Steel Navigator," Far East.	
H. A. Astlett & Co.	1,682
Baird Rubber & Trading Co., Inc.	300
Paul Bertuch & Co., Inc.	50
General Rubber Co.	7,080
Haldane Bierrie & Co., Inc.	648
Littlejohn & Co., Inc.	2,030
The Meyer & Brown Corp.....pkgs.	1,001
H. Muehlstein & Co., Inc.	673
Poel & Kelly, Inc.	45
Rogers Brown & Crocker Bros., Inc.	450
Charles T. Wilson Co., Inc.	1,348
JULY 15. By "Veendam," Amsterdam.	
Haldane Bierrie & Co., Inc.	412
JULY 15. By "Veendyk," Europe.	
H. A. Astlett & Co.	233

Africans

JUNE 15. By "Wytheville," Europe.	
Littlejohn & Co., Inc.	92
JUNE 16. By "Pipestone County," Europe.	
Littlejohn & Co., Inc.	†301
JUNE 22. By "Chicago," Europe.	
Baird Rubber & Trading Co., Inc.	168
Littlejohn & Co., Inc.	450
JUNE 28. By "Sacandaga," Antwerp.	
Hood Rubber Co.....bags	†686
JULY 4. By "Laconia," Europe.	
Littlejohn & Co., Inc.	30
JULY 4. By "Roussillon," Europe.	
Littlejohn & Co., Inc.	582

Balata

JULY 6. By "Commewyne," South America.	
Middleton & Co., Ltd.....bales	54

Guayule

JUNE 17. By "San Jacinto," Mexico.	
Continental Rubber Co. of New York.	560
JUNE 22. By "Tela," Mexico.	
Continental Rubber Co. of New York.	1,680
JUNE 22. By "Railways," Mexico.	
Continental Rubber Co. of New York.	‡500
JULY 1. By "Railways," Mexico.	
Continental Rubber Co. of New York.	‡500
JULY 5. By "Camaguey," Mexico.	
Continental Rubber Co. of New York.	1,680
JULY 11. By "Monterey," Mexico.	
Continental Rubber Co. of New York.	1,742

Rubber Latex

JUNE 30. By "Pres. Garfield," Far East.	
Rogers Brown & Crocker Bros., Inc.	†162
JULY 1. By "Silvercedar," Far East.	
General Rubber Co.	94,042
JULY 3. By "Kendal Castle," Far East.	
General Rubber Co.	36,739
JULY 14. By "Pres. Harrison," Far East.	
Rogers Brown & Crocker Bros., Inc.	†48
JULY 14. By "Steel Navigator," Far East.	
General Rubber Co.	29,337

*Arrived at Los Angeles.
†Arrived at Boston.
‡Arrived at Texas.

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
JUNE 10. By "Cuthbert," Brazil.					
H. A. Astlett & Co.	368	1	171	726	...
JUNE 21. By "Southern Cross," Bolivia.					
Paul Bertuch & Co., Inc.	*203	...	...	...	...
JUNE 22. By "Chicago," Europe.					
Littlejohn & Co., Inc.	146	...	146	124	...
JUNE 24. By "Sheridan," Brazil.					
H. A. Astlett & Co.	32	...	82	189	...
Paul Bertuch & Co., Inc.	169	...	...	...	...
Paul Bertuch & Co., Inc.	*169	...	†165	‡642	...
JULY 2. By "Dunrobin," Brazil.					
H. A. Astlett & Co.	32	...	10	...	...
General Rubber Co.	28	3	...	...	**1
Littlejohn & Co., Inc.	...	...	...	150	...
JULY 9. By "Alban," Brazil.					
Paul Bertuch & Co., Inc.	*300	...	...	...	...
General Rubber Co.	49	7	1	...	...
Littlejohn & Co., Inc.	...	...	...	75	...

*Biscuits. †Sacks. ‡Ba'es. **Cameta.

United States Crude and Waste Rubber Imports for 1927 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1927	Total 1926	Balata	Miscellaneous	Waste
January ..... *tons*	42,646	2,378	269	299	144	...	45,736	38,697	106	1,508	447
February	25,326	1,668	213	203	190	...	27,600	34,067	119	935	953
March	33,114	1,176	206	253	329	...	35,078	42,677	82	674	531
April	45,843	1,822	351	229	418	10	48,673	32,678	109	1,317	631
May	33,735	1,872	197	399	364	2	36,569	30,411	68	1,075	1,056
June	31,444	1,057	123	251	317	2	33,194	30,107	85	1,092	230
Total, six months, 1927..*tons*	212,108	9,973	1,359	1,634	1,762	14	226,850	.....	569	6,601	3,848
Total, six months, 1926..*tons*	194,977	7,075	1,961	2,430	2,168	26	.....	208,637	271	5,471	2,877

Compiled from statistics supplied by the Rubber Association of America, Inc.

World Rubber Production (Net Exports)

Long Tons

	1926, Total	1927 Jan.	Feb.	Mar.	April	May
British Malaya	240,085	19,951	15,921	23,882	15,972	15,902
Ceylon	58,962	6,697	3,571	7,142	3,349	3,124
India and Burma	9,874	921	1,469	1,124	723	760
Sarawak	9,155	959	552	997	984	786
British Borneo	6,804	500	500	500	500	500
Siam	4,028	304	360	432	526	348
Java and Madura	52,186	4,184	4,707	5,657	4,666	5,430
Sumatra East Coast	71,413	6,705	6,526	7,003	5,530	5,528
Other D. E. Indies	121,231	10,541	10,634	12,490	10,035	14,099
French Indo-China	8,203	941	675	733	557	586
Amazon Valley	24,298	2,885	2,082	3,203	2,374	2,431
Other America	2,998	217	174	149	....	....
Mexican Guayule	4,306	292	426	455	491	399
Africa	8,713	472	498	1,187	....	....
Total	622,056	55,569	48,095	64,954	....	....

The figures shown for British Malaya are gross exports minus imports, and no attempt has been made to arrive at a figure of Malayan production of dry rubber. Other Dutch East Indies in the table is composed mostly of wet native rubber which is shipped to British Malaya for remilling. By treating British Malaya and Other Dutch East Indies in this manner, the wet native rubber is automatically accounted for and the totals represent world rubber production on a dry basis.—Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

Long Tons

	1926 Total	1927 Jan.	Feb.	Mar.	Apr.	May
Australia	9,021	929	460	780	762	694
Belgium	2,498	296	502	454	448	.....
Canada	20,229	1,936	2,620	3,760	1,509	2,073
Czechoslovakia	1,870	131	251	143	219	.....
Denmark	575	52	27	76	27	.....
Finland	734	47	65	44	34	76
France	34,240	3,284	3,263	2,050	2,310	2,006
Germany	22,775	2,481	3,103	3,475	2,393	3,380
Italy	9,810	672	601	852	781	.....
Japan	17,616	1,227	1,902	1,578	2,181	1,084
Netherlands	2,670	181	153	86	58	– 57
Norway	609	53	53	46	*50	.....
Russia	6,528	803	907	784	1,972	887
Spain	1,299	139	146	137	177	.....
Sweden	2,126	164	191	219	136	.....
United Kingdom	84,866	10,191	7,692	9,049	7,875	2,896
United States	395,667	41,814	25,886	32,751	44,627	33,761
United States (Guayule)	4,305	292	426	455	491	399
Total	617,438	64,692	48,248	56,739	66,050	.....

– Minus quantity; excess of reexports over imports.
* Estimate.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

ARGENTINA, NOW A LEADING MARKET FOR AMERICAN-MADE tires and tubes, has the following record for import values during the last few years: 1923, $1,317,512; 1924, $1,551,422; 1925, $2,509,524; and 1926, $3,594,444.

TIRE INVENTORY—PRODUCTION—DOMESTIC SHIPMENTS

During May the inventories for all classes of tires and tubes continued the advance which has been evident throughout the present year, the single exception being the record for high pressure inner tubes. There has been a corresponding decline in both production and shipments, according to Rubber Association figures, although these totals are considerably larger than those for May, 1926.

The production and shipment figures for May, 1927, of all types of pneumatic casings were 4,613,945 and 4,243,078 respectively, as compared with the corresponding records for the month preceding of 4,724,748 and 4,276,464. Figures for all types of inner tubes stood at 5,053,018 and 4,605,277, as against the corresponding production and shipment records for April of 5,529,936 and 4,769,385. The May production of solid and cushion tires, at 64,617, represented the only gain in output for any of the classes of tires.

The May consumption of cotton fabric in the manufacture of casings and inner tubes was 16,028,546 pounds, while the total consumption thus far for 1927 is 60,646,799 pounds. The amount of crude rubber used during May in such manufacture was 47,270,044 pounds, the total for 1927 being 186,999,779 pounds.

	May, 1927 Inventory*	Production	Total Shipments
Pneumatic casings—all types	9,346,581	4,613,945	4,243,078
Inner tubes—all types	13,792,496	5,053,018	4,605,277
Balloon casings	4,106,840	2,708,350	2,337,572
Balloon inner tubes	5,830,272	2,907,364	2,342,781
High pressure cord casings	4,685,780	1,867,667	1,805,930
High pressure inner tubes	7,962,224	2,145,654	2,262,496
Solid and cushion tires	174,731	64,617	48,227

COTTON AND CRUDE RUBBER CONSUMPTION IN TIRES AND TUBES

	Pounds
Cotton fabric	16,028,546
Crude rubber	47,270,044

*As of May 31, 1927.
Rubber Association figures representing 75 per cent of the industry.

THE BALATA INDUSTRY OF BRITISH GUIANA IS PRACTICALLY AT a standstill, according to consular reports. There are said to be large stocks of balata on hand and no buyers, with the result that many hundreds of laborers are out of jobs. There has been, however, an increase in exports of rubber during the first quarter of the present year as compared with the corresponding three months of 1926.

1927

Miscel. Cases
...
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Waste
447
953
531
631
1,056
230
3,848
2,877

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Total
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05,930
62,496
48,227

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